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Artificial Fever Therapy, a Critical Review

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ARTIFICIAL fever therapy, as a therapeutic aid in curing diseases has only recently received extensive notice, emanating mostly from Whitney's[1] observation in 1926 that high frequency fields would produce increased body temperature, and that men subjected to this form of increased body temperature felt better after being subjected to such radio heat influence. Many mechanical devices for production of heat have been recently put on the market, among them the air conditioned heat cabinet, devised by Kettering and Simpson (Kettering Hypertherm), which was used by Simpson[2] in 1935 for the treatment of 106 syphilitic cases, among them 20 cases with dementia paralytica, with results that equalled the monumental earlier work of Wagner Juaregg[3] in 1918 on the use of induced malarial fever in the treatment of progressive paralysis. This work of Simpson's together with that of numerous other observers, both local and foreign, showed that the high fever itself rather than the malarial infection was the causative factor in inducing remissions of progressive paralysis, whether the fever was malarial induced, radio induced, or heat cabinet induced.

The use of heat for treating disease goes back to Hippocratic times and gives us new thought for an ancient axiom: "Those diseases which medicines do not cure, iron (the knife) cures; those which iron cannot cure, fire (heat) cures; and those which fire cannot cure are to be reckoned wholly incurable."

The production of fever therapy has only recently received somewhat appropriate investigation. Results of studies of various men over the country, such as A. E. Bennett[4], F. W. Hartman[5], Kettering and Simpson[6] Bierman and Horowitz[7], and Boak, Carpenter, and Warren[8], have finally given us some understanding of what actually takes place when fever occurs in individuals. In the artificial production of fever, we find that the defensive mechanisms of the body are increased and fever, instead of being viewed with alarm, is now finding an accepted place as a means of better preparing the body for defense. Actual increase in the formation of immune bodies and anti-bodies has been demonstrated. Leukocytosis and phagocytosis is favored, while metabolism rises 7% for each degree rise of temperature Fahrenheit. Hand in hand with these favorable body conditions, as a result of fever, there also occur certain biochemical changes. These consist mainly in the disappearance of free hydrochloric acid of the stomach and the loss of sodium chloride from the body, as a result of sweating, together with a definite anoxia or oxygen lack in the body.

The best physiological investigations have been done with the Kettering hypertherm. In a five-hour session, with temperautre ranging from 105° to 107° F., *Hartman* of Detroit has shown in an animal experimentation with fever therapy, a very distinct lessening of the oxygen saturation of the arterial blood, i. e. anoxia. Normal values range around 80% to 85% saturation, while on animals that died from fever therapy alone, no animals showing an arterial oxygen saturation below 65% survived. Animals to whom he administered oxygen, at the rate of six liters per minute, showed no diminution of their oxygen saturation and no fatalities occurred. Careful autopsies on the fatal animals showed essentially the same findings as occurred in the clinically fatal case. In this case there was at autopsy grossly marked edema of the brain, with necrosis and haemorrhage. Edema and haemorrhagic conditions of the lungs also occurred.

Microscopically there were extensive areas of necrosis with haemorrhage in the cerebellar hemispheres and marked edema with pyknosis of nuclei of Purkinje and pyramidal cells. The lungs showed a hemorrhagic pneumonia.

That these changes are the result of anoxia or oxygen lack is well substantiated by Hartman's subsequent experimental work in dogs submitted to fever therapy as in the dogs that died as a result of this procedure alone essentially the same anatomical changes took place, while in the animals receiving oxygen, none died.

Landis[9] showed that a three-minute lack of oxygen increased the rate of fluid diffusion through capillary walls to four times the normal rate, thus causing tissue edema.

Cobb and Gildea[10] showed experimentally that in cats a lack of oxygen produced wholesale necrosis of cerebral tissue. Haemorrhage was accompanied by a massive necrosis in all cases.

Courville's[11] study of fatalities in nitrous oxide anaesthesia showed brain lesions that are practically identical to those due to fever therapy fatalities.

The one common factor to these several conditions is anoxia or a lack of oxygen to the body tissues. From the practical standpoint, this investi-

gation of Hartman's will therefore probably prove to be of the greatest possible value to the understanding of fever and the more widespread use of fever therapy, as it will undoubtedly point the way to the safe conduct of many cases through this valuable therapeutic measure, who otherwise could not physically endure it, by the proper and adequate administration of oxygen, as well as of saline fluids and glucose to the patient receiving artificial fever therapy.

Oxygen is felt to be of value in clinical cases of moderately to severely high fever, due to severe infections or sepsis.[12]

While today most of us feel, and rightly, that antipyretics are necessary in the course of treatment of most febrile diseases, to at least some degree, we also recognize that the too free use of such drugs undoubtedly exerts a harmful and deleterious effect upon the human system, as exhibited in prostration, extreme weakness, or extreme sweating with exhaustion following. Such untoward use of antipyretics is of course to be avoided and deplored, but all of us can recall the favorable influence on rheumatism, stiff joint, gonococcic infection, or other types of more or less chronic disorders, by the occurrence of a fairly acute febrile infection, such as an attack of pneumonia, typhoid fever, or any of several acute infections. These observations can have but one interpretation, namely that fever is one of the body's defense mechanisms, by means of which it speeds up the metabolic processes of the body, increases phagocytosis, brings about definite leukocytosis, and increases the immune bodies in our system. Experimentally these observations have been confirmed and more exact information is being rapidly extended to many fields.

Fever therapy does not depend *per se* upon the type of machine used but rather upon the proper understanding of the care of the patient during the course of a treatment. This latter has been emphasized many times over by those men who have today had the most experience with this form of therapy, and because of certain fatalities, it must be realized that this form of therapy cannot be accepted for indiscriminate use. However, despite the exceptional advantages which undoubtedly result from the use of such machines as the Kettering hypertherm, which seems to be the most easily controlled of all devices so far designed, there are nevertheless many methods for obtaining the same end. This end is merely the increase of body temperature. It has been shown that hot baths, spa treatments, as far as the baths are concerned, spark gap diathermy, radio tube diathermy, inductotherms, and other electrical devices, depend entirely upon the induction of heat within the body by placing of the patient within an electro-magnetic field. The electricity *per se* has no beneficial effects upon the human system, so far as we know, but the induction of heat is the real factor. Included in methods of inducing heat may be mentioned the infra-red lamp, lamp cabinets, and the sweating baths, as well as the hot pack. These latter methods all have their place and may be utilized if time and adequate care are given to the patient, should the recent devices, which can more accurately control humidity and temperature be unavailable. These simpler methods all suffer from the same lack, namely undue sweating on the part of the patient, a sense of confinement, and usually a failure to make up for saline loss.

Now that the work of Hartman has been done, we realize the vast importance of oxygen administration to patients receiving fever therapy, and this is very good physiology because of the 7% rise in metabolism per degree rise in temperature, which occurs in fever. Increased metabolism means increased energy requirements and therefore increased oxygen requirements.

The diseased conditions that most readily respond to artificial fever therapy have been gonococcic infections and neurosyphilis, more particularly general paresis. The results in arthritis have been at times most gratifying, in others not so much so, but acute and chronic gonorrhea and gonorrheal arthritis have shown the most favorable results from this treatment. Asthma also has shown definite remissions from prolonged fever therapy.

The trend would seem to be the training of physicians in this work as a specialty, in certain medical centers, but until population and competition bring such specialists to our midst, it behooves us here to try and adapt simpler methods to our use. One of these is the Elliott Fisher machine. This is a means of inducing heat within the female pelvis by circulating hot water confined in a rubber bag containing inlet and outlet. The machine does three things simultaneously: heats the water, circulates the water via two way tubing to and from the bag, and causes the appropriate pressure. The rate of circulation cannot be controlled but the pressure and temperature are both under the immediate control of the operator. This form of therapy, using 15 to 45 treatments of one hour each, on successive days, has been found most beneficial where other forms of therapy have failed. It is felt that if the light cabinet with blankets is properly used, the temperature of the patient checked, and cool saline drinks offered, the patient's head kept cool by a fan at his head, and a careful watch maintained upon his respiratory condition by a trained nurse during the treatment, that fever therapy may be safely induced to 104° to 106° F., especially if the cardiovascular and bio-chemical state of the patient has been carefully checked previously and shown to be strong enough to stand such hyperpyrexia. Cases of untreated, acute or chronic nephritis, active tuberculosis, acute and chronic alcoholism, and particularly cardiac decompensation and coronary disease must not be treated.

SUMMARY

1. High fever is a causative factor in remissions in neurosyphilis, in acute and chronic gonorrhea and gonorrheal arthritis.

2. Fever may be induced by malarial infection, electrical induction in an electro-magnetic field, heat cabinet, or other simpler means, such as electric lamp cabinets, hot baths, or hot packs.

3. The degree of temperature and the duration of the same are essential factors in effective remissions.

4. It is absolutely imperative that the patient be under constant supervision of a physician or nurse technician in the administration of fever at higher levels, as above 105° F.

5. Careful preliminary physical examination and bio-chemical examination are essential prior to induction of treatment if the patient's welfare is to be adequately guarded.

6. Cases of untreated diabetes, acute or chronic nephritis, active tuberculosis, coronary disease, and cardiac decompensation must *not* be treated.

7. Saline drinks during the treatment, glucose if indicated, and oxygen inhalation at the rate of at least 6 liters per minute by nasal catheter afford satisfactory safe-guards.

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The Changing Emphasis in Health Work

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ONE who has been conversant with and intensely interested in the development of public health work in rural areas from the early days of the movement must inevitably be impressed with the changing emphasis which has developed in this field within the past few years. When the beginning was made in 1920, the average rural state possessed a few full-time county health departments, each of which was woefully understaffed and each of which was and still is, woefully underfinanced. It seemed in those early days that a choice had to be made by many rural health units between the employment of a public health nurse and a sanitary inspector, since in all too many instances the available funds did not permit the employment of both a public health nurse and a sanitary inspector in the same health organization. As far as employing two or more public health nurses in one unit was concerned, this occurred so frequently as to become a topic of conversation and a veiled charge was raised by the taxpayers concerning "tax-eating" agencies, shamefully wasting the hard-earned monies of common citizens.

The staff of a full-time rural health department in those early days was composed of a full-time health officer, a nurse, a sanitary inspector, and an office clerk. This was the standard staff advocated by such sponsoring agencies as the Rockefeller Foundation and the U. S. Public Health Service. This staff was to be regarded as a minimum of personnel, but yet such staff was considered es a standard for newly developed health departments, almost without reference to the population or the distances involved in rendering services to the inhabitants of the rural area.

The program to be developed in these rural counties in the early days was likewise rather rudimentary in concept, but difficult of development. The first emphasis was placed upon the detection and control of communicable diseases, with the appropriate campaigns for immunization against diphtheria and typhoid fever. The second point of interest was early devoted to the securing of more complete registration of births and deaths. Environmental sanitation, including excreta disposal and the provision of safely protected water supplies engaged the attention of health units possessing sanitary inspectors. From the outset and even today, a large part of the time of the inspector, as well as of the health officer, was and is devoted to correcting nuisances. Early in the development of health work, the public health nurse devoted her attention to the pre-school child clinics, or as they

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are called in some localities, "Well Baby Clinics", to the hygiene of the school child, to the detection of physical defects and the attempt to secure the correction of the remediable defects. Health officers, sanitarians and public health nurses to varying degrees were interested in the sanitation of dairies, cafes, and other types of food handling establishments. Every opportunity was embraced to talk with citizens in the effort to give them a bit of that intangible something which was called "health education". Tons of pamphlets, booklets, and so-called literature, furnished not only by reputable, scientifically-minded agencies and organizations, but also liberally supplied by organizations actuated by a desire to advertise a product and extend its adoption and use by the public, were distributed by all members of health departments. It was even carefully counted and accounted for on the monthly, quarterly and annual reports. Then, too, it must not be forgotten that along with the monthly, quarterly and annual reports, a narrative report was required. I never think of a narrative report without being reminded of the German noun "Narr", meaning a fool. In the preparation of this paper, I was stimulated to ascertain its meaning in another language, I was rather satisfied to discover than in the French, it is derived from "narratif", meaning "garrulous", which aptly describes many narrative reports which I have scanned.

We must not forget, in these days when so much emphasis is being placed upon the endeavor to "stamp out syphilis", that in the early days of our health departments, we were well equipped with venereal disease clinics, to which all indigent syphilitics were welcomed, and where exactly as scientific treatment was rendered as is true of the syphilis clinic of recent months. Those clinics of the early days were ably and scientifically served through the volunteer services of interested physicians, rather than by the health officer himself. However, the old time venereal disease clinics did serve a smaller number of individuals because the columns of the daily press were closed to the health officer, in so far as the use of the words syphilis or gonorrhoea was concerned.

Tuberculosis was a major consideration of health workers in the early days. The use of the tuberculin test, early case finding campaigns, regularly recurring chest clinics, and the provision of laboratory facilities for the early diagnosis of tuberculosis were a part of the program of many health departments from their inception. These clinics had the valuable advice and assistance of recognized experts in the field of tuberculosis. Usually there were facilities whereby radiologic examinations might be afforded the needy at reduced rates, or the cost might be borne by one of a number of health-minded organizations or individuals.

Today public health is facing a changing emphasis in its major interests activities and endeavors. The past era has been characterized by a devotion to the ideal of prevention, of environmental sanitation, and of the supervision of that natural function, pregnancy, through various prenatal, obstetrical and post-natal clinics and services. The past era was characterized by the public health worker attempting to perform those services which the practicing medical profession was not equipped to do, or was uninterested in carrying out as a mass procedure. I think we may aptly characterize the past endeavors of the health worker as being of the nature of "mass activities", where the emphasis was placed upon the immunization of thousands against diphtheria or typhoid, or the freeing of other thousands from their infestations with hookworm or the malarial parasite.

During the past century, the expectation of life at birth has increased from approximately thirty-five years to somewhere between sixty and sixty-five years. This has brought about corresponding changes in the age groups and numbers in the population distribution which has in turn been reflected in the relative ranking of the diseases causing the largest numbers of deaths. For the country at large, tuberculosis has been displaced from the top of the list, and today that position is occupied by heart disease. Cancer has passed tuberculosis to occupy the second position, while deaths from external causes likewise has passed tuberculosis to occupy third place, while cerebral hemorrhage, pneumonia and the various forms of nephritis have all exceeded tuberculosis, which today rests in the seventh position of leading causes of death.

These changes in the relative importance of different groups of diseases and accidents bring into the forefront of importance those diseases which are the diseases of adult life, and as Wolman has put it, "they represent the results of the impact of heredity, environment, and early experience, biological or otherwise, upon the individual. They require for control new technics, a wider base, more money, and more intensive activity on all fronts" This problem will necessitate, not only the continuation of the old task of maintaining mass health, but also will require the control of preventable diseases in the individual. Hence the "maintenance and elevation of physical and mental efficiency must assume new importance in the field of public health. Increased facilities for hospitalization, dispensary service, nursing facilities, and medical care of all types are obvious requirements for the future. These activities presuppose the development of professional services of an amount and of a quality not yet available. Facilities for the training of personnel must be improved, extended and maintained. Local and central governments may be depended upon, with the continuing support and advice of voluntary groups, to develop the objectives of public health and the methodology of attaining these objectives, but their success must depend, particularly in the shifting and expanding zones of public health activity, upon public understanding and sympathy in the most remote hamlet

as well as in the state and federal capitals. The practitioner of public health must add to his armamentarium of medical and public health science a new concept of governmental relations, in which local autonomy and interest are revived under the stimuli of intelligent state and federal agencies.'"

This changing viewpoint in health work is rather well presented by a recent editorial in the American Journal of Public Health, from which the following quotation is derived: "Is the practice of medicine and surgery of concern to the public health? None but the most hide-bound reactionary can doubt it. It makes little difference to the victim whether he dies from undiagnosed scarlet fever, diphtheria, or ruptured appendix. Each is set down in the record as a preventable death in the statistics of state and federal health departments. Many groups, official and unofficial, have attempted to evaluate the practice of medicine in this country. . . The worthwhile health officer soon learns that the success of his work for the public health depends in no small measure upon the cooperation which he is able to bring about between his office and the local practitioner of medicine. Each needs the other and neither can go it alone without unfortunate and sometimes disastrous results. It is said that a 'good wine needs no bush'. This does not apply to the unostentatious, serious-minded and scientific physician who has no use for cheap publicity. He needs legitimate backing to have his worth established and his services sought. On the other hand, the successful health officer needs to be a propagandist in the interest of public health, using every legitimate and dignified means of support those factors upon which personal and community health depend, not the least of these being the quality of the medical service available to the community.'[1] If the deaths from these preventable diseases of adult age are to be prevented, there must be developed a spirit of team work between the private physician and the public health worker.

As the mortality in the early age groups has diminished, there arises the greater recognition of the chronic diseases of the older age groups. Two-thirds of the deaths of persons between the ages of twenty and sixty-five are due to the chronic diseases. While in the past health workers have been prone to consider the chronic diseases as the natural accompaniment of the process of the wearing out of the body after a full and complete life has been lived, this viewpoint must be changed, since it is most unscientific to consider that life has been lived to the fullest extent and that the body has become naturally worn out and its vital forces dissipated by persons of ages ranging between twenty and sixty-five years. And when one considers the economic aspects of these chronic, long-continued illnesses upon family life and standards of living, it cannot longer be denied that the emphasis on health work is changing and must needs be changed.

As is so well stated by Britten[2] "these chronic diseases cast their shadow before them. In the baffling problem of these diseases, one possible direction of attack is suggested, but it must not be overlooked that it is one thing to find a condition and another thing to cure that condition or to eliminate the risk of later effects. The public health admniistrator must determine what can be done in the light of these facts. There appear to be two problems: first, how to identify these signs of chronic disease at the earliest possible moment, and second, to determine how to eliminate the associated risk of mortality. For these problems there are obviously no simple solutions."

How frequently do these chronic impairments of health occur in the general population? In a study carried out in Cattaraugus County, New York, a rural area considered to be typical of rural areas of this country as a whole, an attempt to evaluate the incidence of health impairments through (1) obtaining a brief record of the personal and family history, (2) through a careful routine physical examination, nicluding x -ray of the chest, (3) a routine laboratory examination of a urine specimen, and (4) a tuberculin test. While this method utilized the procedure of random sampling, about one-fourth of the population of the area was examined. This study demonstrated that the number of health impairments increases rapidly and consistently with age, and that little is being done to prevent their development or to secure their correction. The study likewise indicated that eighty per cent of these impairments could be benefitted by medical, dental or other special forms of care, while forty per cent of individuals presenting health impairments were regarded as needing some form of advice or treatment from their physician. This finding indicates that not much improvement has been accomplished since the days of the selective draft of the World War, when forty-six per cent of young American men were found to have defects, and that about one-half of this percentage had defects of such serious nature as to cause their rejection for military service.[4]

In her address on "Medical Care as a Public Health Function" at the recent meeting of the American Public Health Association in New York City last October, Miss Josephine Roche, Assistant Secretary of the Treasury in charge of Public Health, made a number of statements extremely significant of the intimate connection existing between annual income and disabling illness. Based upon the results of preliminary surveys upon three and a half individuals, comprising three-quarters of a million of American families, Miss Roche states that "disabling illness among persons on relief is 68% higher than among those families with an annual income of $3000 or over; that the unemployed have twice the disabling illness that the employed have; that Works Progress Administration workers have a disabling illness rate 40% above that of other employed persons; that one in every twenty heads of families on relief is unemployed because

of disability while only one in two hundred fifty heads of families in the higher income groups is unemployed because of disability."

Miss Roche continues with the observation that sickness and death among the poor require preventive services and medical care proportionately greater in extent than that demanded by those in the higher income groups. Yet those population groups whose medical needs is the greatest and whose needs can only be met wholly or in part from public funds, are receiving far less care than the higher income groups. Inventory data show, according to Miss Roche, that only 67% of the cases of disabling illness among relief persons received medical attention, exclusive of hospital care, as compared with 80% of those with a family income of $3000 or over. The average medical services per case of disabling illnses were about 50% higher in the highest income groups than among persons on relief. Bedside nursing care was given in the home to less than one per cent of the disabling illnesses among persons on relief; while among families with an income of $3000 or more, this was ten per cent.

When facts of denial and destruction of human values, such as those mentioned, are discussed in terms of the size of the population involved—the tens of millions of men, women and children who are their victims—the problem of providing adequate health and medical services obviously demands concerted public action for its satisfactory solution. Between 45 and 50 millions of our population are found in families with an annual income of less than $1000. Upwards of fifteen millions of the group with an annual income under $1000 are found in rural areas which have a special need for basic public health service, additional medical and nursing personnel, and hospital facilities. An additional group of some fifty millions of persons with family income between $1000 and $2000 requires public aid in the medical care of certain illnesses in which treatment is extremely costly because of their long duration or of their demand for specific facilities for diagnosis or care.

The Social Board has recently pointed out that even if a minimum annual income of $2000 could be maintained for American families, this amount would still be insufficient to enable them individually to budget against the costs of illness. Three possibilities are open to low-income families which suffer extensive illnesses; (1) they may go without needed medical care; (2) they may carry the burden of medical debts; or (3) they may rely upon the charity of doctors and hospitals, or receive their services from tax-supported and philanthropic agencies.

As Miss Roche aptly states "The challenge which confronts public health workers today is in essence the same as that which confronted the great leaders of the past when human life was wiped out by epidemics and infectious diseases. The objective for which they strove is identically the same as yours today—to save life, conserve health, to prevent death and disease. So you take on no new function when you turn to new ways and means to meet this unchanging objective. Death and disease are no less your responsibility to prevent because the cause for them has shifted, demanding care of the individual by public means when that individual's economic status makes impossible his securing for himself medical care and facilities necessary for saving life or health."[8]

In the presidential address before the last meeting of the American Public Health Association, Dr. Arthur McCormack makes the following statement:

"What shall we do about medical service for those who are ill? I would urge that we make it our first objective to do well what has already been assigned to us by the common consent of all the people, with the approval of the medical profession, in the public health field. We should oppose at all hazards the socialization of medicine. We should give every assistance to those of our profession engaged in the practice of curative medicine in the solution of their problem of medical care of the indigent and of those only partially able to bear the cost of illness. The medical profession of America has proudly carried on the traditions which have been handed down from leader to leader since the days of Hippocrates. Sometimes the banner of science has seemed to be beyond the horizon of those who most needed its encouragement; but it has always been found again and borne aloft by succeeding generations of those who have given this great service to mankind. Every other progressive agency has helped to promote and improve civilization but no other can claim to be, or be acclaimed as a more faithful servant of mankind. Be assured that the American Medical Association, its autonomous constituent state associations, and component county societies are fully alive to their responsibility. Be not impatient with their progress. Prod them and threaten them a little, if you will. Remember that they have always lived up to their responsibility to the people of this country and they always will. It is perfectly obvious that so great a service organization would, if it could be assimilated and controlled by any one of the social groups that would put their unhallowed hands upon it, be a conquest whose value would be beyond computation. But let these groups beware, because should they win such a costly war, it would become a Pyrrhic victory. The finer qualities which now characterize the physician would soon disappear in the routine of the official. As for the public health group in the medical profession, it behooves us to remember with pride the research, the achievements, the service, the lives of those who made all our knowledge possible. And we should recall constantly to ourselves, to our brethren, and to all the world that we are physicians, doctors of medicine, proud of our calling, ready to modify our plans whenever better ones can be devised. So long as we do this, we may look forward to the future unafraid.

"It is not enough to stop with this tribute to medicine. It was about 72 years ago that the Lady of the Lamp walked through the darkness of the Crimea and, with a tiny spark, aroused a force that has inspired the world. And yet for 40 years after Florence Nightingale lived and worked most people died during the ministration of Sairey Gamps. Clara Weeks and her associates began the systematic education of nurses within the memory of many now here. We have just celebrated the twenty-fifth birthday of the National Organization for Public Health Nursing. The public health administrator who would not bow to this fine group of those who serve would fail to recognize the right hand of medicine."[6]

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Pneumonia in the Southwest

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RECENTLY in an editorial in the J.A.M.A.[1] it was brought to our attention that "most of the cities with unusual pneumonia death rates . . . for 1929-1931 are located in the southwestern or northwestern parts of the country." Also that "the Southwest and the Southeast have much less equipment and practically no activities in typing."

In Phoenix there are four laboratories and three hospitals available for pneumococcus typing by the Neufeld rapid method. The actual use of these facilities is surprisingly low. For example, in St. Joseph's hospital only 33 instances of the determination of specific pneumococcus type out of 557 cases of pneumonia treated during 1936-1937 were on record. Nineteen of these 33 cases of pneumonia were given specific anti-pneumococcus serum.

The Pathological Laboratory, where the typings for St. Joseph's, Good Samaritan, and Indian School hospitals are done, reports that they have performed only 17 typings in the three months prior to Dec. 1, 1937. At this rate there would be only 68 typings performed in these institutions in a year while the approximate number of pneumonia patients in a year numbers 550. In other words only 12% of the pneumonia patients are given the benefit of pneumococcus typing with the possibility of specific treatment.

Undoubtedly this condition is prevalent elsewhere in the Southwest and it is time we pause to take a look at methods to remedy this situation, and to lower our mortality rate in the Southwest.

The curative value of concentrated specific immune horse serum *has been established* for the pneumococcic pneumonias of Type I and Type II[2], and evidence is rapidly accumulating that it is also efficacious in Types V, VII, VIII, and XIV. Also considerable experimental work is being done at present with immune rabbit sera which may eventually prove valuable in the treatment of each of the specific pneumococcic types.

However, the general introduction of specific serum therapy has been slow and apparently slower here in the Southwest than in most of the rest of the country. The reasons given have been:[3]

1. The lingering of the dictum that the disease is self-limited.
2. Hesitation on the part of general practitioners to employ serum intravenously.
3. The difficulty in obtaining serums, and their high cost.
4. Lack of facilities for the differentiation of pneumococci.
5. Failure on the part of health authorities to recognize the communicable character of the pneumonias and to urge appropriations for the free distribution of anti-pneumococcus serums.

Undoubtedly we have a greater percentage of so-called atypical or broncho-pneumonias here in the Southwest. In fact the records of St. Joseph's Hospital show that out of 557 cases of pneumonia during 1936-1937 (up to Dec. 1, 1937), there were 193 lobar, and 364 "atypical" or broncho-pneumonias. This latter group included 67 cases of influenzal pneumonia, 23 cases of tuberculous pneumonia, and 33 cases of unresolved pneumonia. Some of the balance are terminal pneumonias and probably should not be included.

However, regardless of this, the fact remains that sufficient knowledge and use of the bacteriologic diagnosis and serum therapy in pneumonia is not evident in this region.

There has been so much published recently on the proper use and indications for serum therapy that it would seem unnecessary to review this subject, but let me briefly state and explain the program we have recently outlined for a pneumonia service in St. Joseph's Hospital.

First, a pneumonia committee was appointed to study and outline a program for the hospital.

Second, a group of Routine procedures and Suggested procedures were drawn up and presented to the hospital staff and is reproduced here.

I. ROUTINE PROCEDURES

(These to be done automatically on admission of the patient whether or not they are ordered by the attending physician, un-

less he specifically advises otherwise, on all patients sent in with a diagnosis of pneumonia or suspected pneumonia.)

A. *Immediate* notification of interne on Medical Service, who will *immediately*:

1. Get history and do physical examination with special reference to
   (a) Onset of illness.
   (b) History of asthma, hay fever, or previous serum reaction.
   (c) Previous pulmonary history.
   (d) Temperature, pulse, and blood pressure.
   (e) Presence of Cyanosis and dyspnea.
   (Does patient need oxygen immediately?)
2. Get a Neufeld pneumococcus typing on sputum.

(If no expectoration, swabbing from posterior pharynx during cough shall be done.)

B. Proper isolation and precautions for contagious disease shall be taken.

(Pneumonia wards [individual screens] and pneumonia section in hospital with special nursing supervision.)

C. Blood counts and urine to be done.

D. If sputum shows Type I or II pneumococcus attending physician shall be notified and specific anti-pneumococcus serum shall be given intravenously in proper dosage after testing the patient's sensitivity.

NOTE: Pneumonia patients are emergency cases to be given the same consideration by the hospital personnel as is accorded a surgical emergency.

II. SUGGESTED PROCEDURES

A. Blood culture on admission and then daily if necessary.

(This is important since bacteremia is an important indication for larger doses of anti-pneumococcic serum and also makes possible a check on the sputum typing.)

B. X-ray plates of chest (especially in atypical pneumonias, aids accurate diagnosis and early appreciation of complications.)

C. Patients giving pneumococcus types other than I or II shall receive specific type serum if available.

D. Agglutination reaction to be done after 2nd or 3rd injection of anti-pneumococcus serum unless pulse and general condition indicate necessity or lack of necessity for further serum administration.

E. 50% glucose intravenously in proper dosage shall be administered in cases showing evidence of pulmonary edema or congestive heart failure.

NOTE: While these latter procedures may be advisable in all cases, they are not routine but subject to the attending physician's orders. However, it is felt that in many cases the additional information obtained from them will more adequately enable the attending physician to treat and avoid complications so that the shortening of the period of disability and the decreased mortality will warant their routine use.

From the above suggestions it was felt that each physician could decide for himself upon various individual modifications. The important thing seems to be to make a diagnosis early and to move quickly after a diagnosis is made, if the maximum results are to be obtained from the use of serum. Most pneumonia patients do not reach the hospital until several days after the onset of the disease and if valuable time is wasted the initial four-day period of most efficient results may be lost.

Briefly let me point out important early clues to a diagnosis of pneumonia:[4]

1. *Character of breathing.*
2. *Cyanosis.*
3. *Dyspnea, cough, pain in the side.*
4. *Localized limitation of respiratory movements with suppression of breath sounds and frequently fine crepitations.*
5. *Character of sputum (blood cells and leucocytes and pneumococci).*
6. *Onset with rigor.*
7. *High degree of leucocytosis.*
8. *Pneumococci of Type I or II are seldom found in throats of healthy persons.*

Again our big diagnostic problem comes in the "atypical" pneumonias (bronchopneumonia) and here it is that the full use of laboratory and hospital facilities become essential if we are to reduce our pneumonia mortality in the Southwest. Bacteriologic diagnosis and serum therapy may help if given an opportunity.

Proper dosage of serum will vary from 50 to 250 thousand units. Usually 100 thousand is sufficient depending upon the condition of the patient, how early in the disease it is given, the presence of bacteremia, etc. After the fourth day and with bacteremia larger doses are required. A drop in the pulse rate or a complete agglutination reaction with the specific type antigen are the two best methods for determining when sufficient serum has been given. Usually serum is administered 20 to 30 minutes after an ophthalmic or skin test for sensitivity, having adrenalin instantly available, and giving an initial dose of 10,000 units intravenously followed in 1 to 1½ hours by 20,000 units and repeating this dose at 2 hr. intervals until sufficient serum has been given. It is not advisable to dilute the concentrated serum in saline because of the possible precipitation. It is advisable to give 20,000 units at 2 hr. intervals rather than as one dose of 100,000 units because of the possible chill or reaction when large doses of horse serum are given. If a reaction occurs serum may be discontinued or the interval between doses lengthened. In case of mild reactions, it is probably better to give anti-pneumococcic serum cautiously with the aid of adrenalin rather than take a chance on the patient getting well without it.

Finally, don't forget oxygen, nourishment, rest, nursing care and all the other essentials of treating pneumonia patients, for after all it is necessary to keep the patient alive until the 12 to 36 hours have elapsed, when serum should start showing its effect.

15 E. Monroe

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Tetany Complicating Intestinal Obstruction

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TETANY is defined as state of increased irritability of the neuromuscular tissue caused by (1) a lowering of the physiologically active serum calcium, (2) an alkalosis with an increase of the pH of the blood plasma.

It may be latent and difficult to detect, or, as is more often the cause, it announces itself by spasms or cramps of cretain muscle groups that may go on to tetanic convulsions or even death.

Formerly, infantile tetany associated with rickets was the type most often encountered. As the result of our increased knowledge of feeding problems and publicity on the subject of vitamins, it is becoming rare. Parathyroid tetany, likewise, is almost a thing of the past since the function of those glands is understood, and the technique of thyroidectomy operations is stabilized.

With the elimination of these causes and types as cited above, we have entered the second phase, so to speak, and encounter more often those cases associated with alkalosis. Occasional cases occur due to overventilation in anesthesia, especially with the use of gas-oxygen. More often they occur following the use of the oxygen tent. A second group occurs following the excessive use of intravenous sodium bicarbonate solutions, warning against which has been stressed by other writers. A third group, classified as gastric tetany, follows the excessive loss of chloride from persistent vomiting, and is most often seen cases of pyloric stenosis, intestinal obstruction, and paralytic ileus. ileus.

In this latter group the immediate cause is the excessive loss of chlorides, as stated, and without exception, the cases develop after persistent vomiting, due to whatever cause, where replacement does not occur. The following case is reported fully because of several unusual characteristics. First, the tetany developed as an early symptom instead of after exhaustive vomiting. Second, the tetany was of a very intense degree, morphia giving only partial relief. Third, the intestinal obstruction, which only developed fully after the tetanic symptoms were present, seemed to be without adequate cause.

CASE REPORT

A white female, age 38, married, two children, above the average in intelligence, without suggestion of neurosis. The family history is negative. She had the usual diseases of childhood, without sequelae. Menstrual history is essentially negative except for some dysmenorrhea. About a year ago she began to show symptoms of the menopause, i. e. nervousness, occasional hot flashes and a tendence to irregularity and diminshed flow. She responded well to theelin. Several months later she began to have severe attacks of facial neuralgia with migraine. Though she responded to theelin, the attacks recurred. At this time physical examination was essentially negative except for the pelvis. A moderate sized ovarian cyst was found on the right, with thickening of the tube on the same side and briad ligament. The ovary quite sensitive. At operation a badly cystic ovary was removed, and adherent appendix, the right tube, and part of the broad ligament. The latter showed multiple cysts on their surfaces. Convalescence was normal. She was discharged on the twelfth day. There was no recurrence of the migraine or the neuritis, she gained weight and felt better than she had in years.

About six months after the operation she was seized with an acute pain in the epigastrium, without previous gastric distress. She had nausea and at the same time severe cramps in the hands, arms, legs, and muscles of the face. This occurred at 6 p. m. That noon she had not eaten lunch, as she was too busy, but had eaten a large bunch of grapes. Her dinner had not been unusual. She was seen thirty minutes of the beginning of the attack. She had carpo-pedal spasm, intense pain in the arms and legs, and there was a marked tenderness in the epigastrium. The face was intensely flushed. The temperature and pulse were normal. She vomited a frothy white mucous at intervals. No medicine had been taken, there was no strychnia in the house, and there was no reason to suspect poisoning. Morphia relieved her partly, but caused further vomiting of undigested food and bile. She was given an enema, with relief of the gastric distress and some of the distention. Turpentine stupes were applied and she had a gastric lavage. She rested comfortably most of the night, with the aid of a mild sedative, and awoke the next morning, hungry. The cramping of the hands, feet, and face muscles had subsided. After a light breakfast of fruit, coffee, cereal, and toast, she had a second similar attack. The muscle cramps were more intense, the distention and epigastric pair more marked. She vomited several times. The same treatment was pursued. The temperature and pulse were normal. The blood count, white—10,150, Polys. 70% red 4,200,000. Despite turpentine stupes and enemas, the distention and abdominal distress persisted. The bowel action was fair. She was advised to enter the hospital, passed a poor night, and did so the next morning. The morning she entered the hospital she had a third attack that was similar in every way. Six hours after entering she had still another attack, and screamed with the muscle pain. A second blood count showed 9,500, Polys. 73. Urinalysis was negative. Mayo enemas relieved the distention somewhat, and she passed a large amount of fecal matter. A blood calaium showed 2.75%, against a normal of 11. She was allowed only hot water and sweetened tea by mouth. She was given 1000 c.c. of 5% glucose and saline solution intravenously, and 10 cc of calcium gluconate administered through the tube. The muscle spasms subsided quickly and did not recur for 24 hours. She rested well, though abdominal distention increased after the saline and glucose. That evening her temperature was 99.6, pulse 90-100. She had one vomiting spell during the night. It was noted that the center of abdominal tenderness had shifted to a point just above the umbilicus. She was given fraction doses of pitressin, which seemed to increase the abdominal pain. The next morning her temperature and pulse were the same, the

blood count 6,500, Polys. 70%. The distention was increased. She passed a little gas. A Mayo enema gave a small return, more gas, and much muccous. That noon she had another attack of tetany. She was given further glucose and saline, with calcium gluconate. This attack subsided quickly, but the abdominal distention and distress increased. The Wagensteen tube was inserted, mineral oil given every six hours, and hot water ad lib. She passed much gas and bile-stained fluid. A consultant advised continuing of the treatment and further watching. It was felt that there was a developing obstruction. That night she returned copious results from the Mayo enema, but passed no gas afterwards. There was considerable mucous. The temperature was 100.2, pulse 100, the quality was not good. The blood count the following morning was 5,400, Polys. 65. Her temperature and pulse were the same, she was decidedly weaker. Another attack of tetany occurred. She passed no gas that morning, and enema gave no results. The distention was much increased, despite the Wagensteen drainage, the muscle spasm more pronounced. After further consultation it was decided to operate.

Gas-oxygen was used. Despite the fact that it was felt that adhesions from the previous operation would be the obstructing factor, the previous field was clear. The lower third of the small bowel and large intestine were flat. Above this area there were three sections of the bowel constricted sharply adherent, at the point of constriction, to the base of the mesentery. There were no enlarged glands. The bowel at these points, showed beginning gangrene. In between, the bowel was greatly dilated and deeply injected, as was the bowel above the constrictions. The plastic adhesions were separated and a catheter inserted through a puncture wound for drainage. The patient suffered some shock during the handing of the bowel, which was minimized. She responded well to caffeine, and left the table forty minutes later in fair condition. Her pulse was 100, her color good. Within two hours, while still somewhat under the effect of the anaesthesia, she became delirous, and was restrained with difficulty. Morphia was given. Her pulse became weaker and more rapid, the convulsive attacks continued. Bespite every effort, she died six hours after operation.

COMMENT

A review of the literature brings to light that tetany following obstruction in the small bowel beyond the duodenoum is rare. Carscadden[1] reports a case following obstruction of the lower part of the bowel due to the adhesion from a Meckel's diverticulum. However, in this case there was exhausting vomiting preceding the complete obstruction, and the blood calcium was at a normal level. With reference to this point McVicar and Weir[2] claim that they have never known gastric tetany to cause a decrease of the blood calcium. However, their cases almost all followed pyloric obstruction or high ileus. Bainbridge[3] reports a case of mild tetany following obstruction of the lower third of the small bowel. He agrees that the autointoxication theory from the absorption of products of destruction of the tissues of the bowel wall influencing the calcium metabolism is a logical explanation of the cause. Higgins[4] reports a small series of cases in which no mechanical or pathological cause seemed to exist for the obstruction, and in which was found only a section of the small bowel collapsed, greyish white in color. The symptoms in these cases were relatively mild. Critchley[5], in his monograph on the pathogenesis of tetany, is of the opinion that the precipitating cause in all types of tetany is an alteration in nittrogen metabolism leading to the appearance in the blood stream of highly toxic nitrogenous by-products, probably guanidin or some of its derivatives. The role played by calcium he cannot explain.

Without doubt there are unknown factors, and probably in each case there is complication of conditions causing the association of these two disease conditions. Why do so few cases of intestinal obstruction develop tetany? Why do some show a marked decrease in the blood calcium, and others, none? Definitely it is a subject that needs further investigation.

Elks' Building.

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Thrombosis and Embolism

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THE problem of thrombosis and embolism is of such importance to every surgeon and obstetrician that it demands review. Embolism accounts for about six per cent of all deaths after operations and eight per cent of deaths after delivery, and since fatal embolism occurs in only about one-sixth of cases with thrombosis, the morbidity from this condition is tremendous. As embolism presupposes an existing thrombosis, the two conditions can hardly be separated for study.

Thrombosis occurred in one of every fifty-three (1.88%) patients in a combined series of 74,213 operations (Dahl-Iversen and Ramberg, Linneberg, Schmidt, Huber and Ranzi, and Torres), but was only half this frequent after delivery, according to Schmidt. Fatal embolism occurred in one of every

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three hundred (0.33%) surgical patients in 223,059 cases collected from the literature, but after delivery was only one-eighth this frequent (0.042%), occurring only 38 times in 90,433 cases. The incidence of embolism remains unchanged in recent years. Thrombosis and embolism can occur after any operation but certain operations are more frequently complicated by them. They are most common after laparotomies, although great variation after different abdominal operations has been reported by Henderson. They occur fairly often after herniorrhaphies, almost never after operations on the thyroid.

A great difference exists between thrombosis and coagulation. Coagulation is a process of *precipitation* in which soluble fibrinogen becomes changed into insoluble fibrin. Various theories have been suggested to explain this process. The clot is that seen in shed blood and postmortem and is a function of stagnant blood. Thrombosis is a phenomenon of *agglutination* of blood platelets. This occurs in the flowing blood stream. Platelets collect in an homogeneous layer on the vessel wall, behind valves, on the site of injury to the vein intima, or even at places where no gross lesion can be demonstrated. More platelets and white blood cells accumulate upon this layer until it may become so bulky as to occlude the vein. Coagulation then occurs at the periphery of the thrombus. Coagulation never occurs in life in vessels unless there is a preceding thrombosis, but thrombosis has been seen in blood which could not coagulate due to the addition of hirudin, according to Zurhelle. Coagulation as occurs in ligated and severed blood vessels postoperatively is a life saving process going on to obliteration of those vessels by scar formation; thrombosis is a dangerous occurrence, resulting often in death.

Why thrombosis occurs is at present unknown. Certain factors which may explain it naturally suggest themselves. Among these are alterations in the composition of the blood, retardation of the blood flow, and changes in the vessel wall. The more factors which concur the more likely is thrombosis to take place.

John Hunter felt that inflammation of the vein wall was of prime importance in the production of thrombosis. Some thromboses occur on the site of inflammatory changes or wounds to veins, it is true, but certainly in the usual postoperative thrombosis, which occurs at a distance from the operative field, and involves predominately the iliac, femoral, and pelvic veins regardless of the operative site, this factor can be of little importance, although in a patient who is susceptible to the development of thrombosis, even minor changes in the vein wall may determine the site of the thrombosis.

Virchow, and later Aschoff, promulgated the theory that eddies in a slowed blood stream serve as starting points for thrombosis. The fact that thromboses are most common in those veins in which the blood flow is most apt to be retarded, or where stasis occurs, adds weight to this theory. Postoperative hypotension due to trauma and loss of blood during surgery, toxic action of the anesthetic on the myocardium, and shock may reduce the velocity of the circulation.

Changes in the composition of the blood occur in all postoperative patients but it is difficult to determine their significance. Many of these changes frequently mentioned by clinicians as responsible for thrombosis can not be incriminated as there is no way in which they can effect the agglutination of platelets.

Gradwohl found definite increase in platelet number after operations, which might be suggestive if Mackay, after an extensive review of the literature and study of eighty personal cases, had not concluded that platelet number has no relation to thrombosis. Jurgens found in polycythemia vera, where there is a high platelet count and a marked tendency for thrombosis, that it occurred in only those cases which showed additional changes of increased fibrinogen, globulin, and tendency to agglutination of platelets, and shortened thrombosis time. These same changes, along with possible increased friability of and alterations in electrical charge of platelets, and substances derived from the autolysis and breakdown of tissue which increase agglutinability of platelets, may be seen postoperatively. The number of white blood cells also increases, which may be of importance since these cells furnish thromboplastic substances. Payr suggests changes in the blood which result from ingestion of potassium salts due to large consumption of vegetables fertilized by artificial fertilizers, and from inhalation of city air containing smoke, vapors and exhaust gases.

A constitutional type susceptible to thrombosis has been suggested. Snell notes that many of those who have embolism are overweight. Sex is apparently no factor. Huber and Ranzi report cases of embolism in the first decade of life but most cases occur during the fifth and sixth decades. The multiple alterations of metabolism and circulation which develop with age are probably responsible for this incidence.

The role of infection is questionable. Many cases with thrombosis and embolism are "clean" cases, but thrombosis occurs often if infection coexists with or precedes operation. Thus Ranzi reports an incidence of five to one in Vienna and twenty to one in Innsbruck among those operated during infection as compared to those operated during the interval. Robertson feels that a hidden infection exists in most cases of thrombosis, while Homans believes thrombosis is secondary to a nonsuppurative lymphangitis. Serdjukov and Jergorov's report of 28.2% thrombosis during puerperal infection would emphasize the importance of infection. Infection may not only produce changes in the vessel wall, but alter the physiochemical properties of the blood as well.

Havlicek suggests the interesting theory that thrombosis is the result of mixture of portal with peripheral venous blood, which can occur in the regions where thrombosis is most often seen, through venous anastomoses between the two systems.

Embolism occurs when a portion of the thrombus breaks loose from the main mass and is carried through the veins. This happens usually on about the eighth postoperative day. Emboli vary in size and the extent of the lesions they produce depends on their size. Large, firmly formed thrombi, closely attached to the vein wall and producing the typical picture of "milk leg" rarely produce embolism of consequence. Bland, loosely adherent thrombi, some lying practically free in the vein lumen, are the dangerous type, for sudden rises in intravenous pressure associated with straining, coughing and movements, may dislodge a piece or even the whole thrombus.

Large emboli produce sudden blockage of the pulmonary artery or its major branches. Most emboli which result in death are fairly small, ranging from the size of a pea to that of the tip of the little finger, according to Lenggenhager, although some as long as 52 cm. have been reported by Wustman and Hallervorden. Since the embolus is derived from veins of smaller caliber than that of the pulmonary variety, it does not completely obstruct until it folds upon itself, a condition seen frequently at autopsy or operation. Death may occur at once following blockage of the large vessels but it may be delayed minutes or even several hours. Hosoi states that 80% of fatal cases die by the third day. In Henderson's series of 204 fatal cases, 103 died within one hour.

The mechanism of death is not known. The area of lung excluded is usually no larger than that seen in pneumonia, extensive exudates, pneumothorax, or lobectomy. Of course, the occlusion of embolism is very sudden and reflex phenomena and shock may come into play. Those who have reported Trendelenburg operations have noted quite often that death has resulted from failure of the right heart rather than obstruction of the pulmonary vessels.

Smaller emboli produce typical infarction of the lung. Delarue and his associates have shown by many experiments that the immediate effect of a small embolism is intense congestion of a quite large area of the pulmonary parenchyma. After some hours the area becomes circumscribed, less diffuse, and intraalveolar hemorrhage predominates the picture. Within forty-eight hours the classical hemorrhagic infarct has developed. This consists of a massive, bloody, homogeneous, infiltration of a lobe or more of the lung. By twelve days the infarct has become well demarcated and surrounded by healthy lung parenchyma. In the region of the hemorrhagic infiltration local hemolysis and sclerosis occur. The area goes on to eventual scarring.

Embolisms occur at times in showers so that a patient may have several before recovery or death. Small emboli will produce serious results in diseased lungs; thus, a second embolism is more serious than the first. Occasionally complications such as bronchopneumonia, empyema and suppurative abscess occur.

The diagnosis of thrombosis may be difficult. Often those from which fatal embolism arises are not even suspected. A low grade fever or elevated pulse rate in a patient whose course is otherwise normal should start an investigation for thrombosis. Pain deep in the pelvis may be present in pelvic thrombosis. Pressure points may be found on the plantar surface of the foot, in the calf of the leg, in the popliteal region, and in the femoral triangle. A difference in the skin temperature of the two feet is constant in early phlebitis according to Ipsen. Edema and skin color changes are usually late symptoms.

When pulmonary infarction occurs the patient develops dyspnoea, anxious facial expression, profuse sweating, rapid pulse, and eventually cyanosis and piercing pleural pain that radiates upward toward the shoulder. Hiccough may be present. There is some elevation of the temperature and the patient usually has sputum containing bright red blood. Examination will reveal a friction rub, later signs of consolidation.

Massive pulmonary embolism is one of the most dramatic and tragic of deaths, for it strikes without warning and usually when most unsuspected. The picture is striking and unforgettable. The patient complains of suffocation and precordial pain, feeling of impending death, develops cyanosis, perspiration, exophthalmos, pallor, dyspnoea, and air hunger, unconsciousness, takes a few gasping breaths and dies. Abdominal pain or desire to defecate may precede these events. Examination of the chest usually reveals nothing except that the heart beats for some moments after respiration ceases.

Errors in diagnosis can be made. Averbuck reports six cases of embolism he saw which had been thought to have coronary thrombosis. Huber reports one case of misdiagnosis which was subjected to the Trendelenburg operation.

A case is presented to demonstrate certain aspects of thrombosis and embolism .

CASE REPORT

E. B., white, American, female, age 42, entered the Flagstaff Hospital, December 27 ,1936, complaining of constant vaginal bleeding for the past six months. Her general physical examination was normal. Blood pressure was 130/80. Her blood count showed 95% haemoglobin; 4,500,000 erythrocytas; 8,600 leukocytes with 80% polymorphonuclear cells. Urinalysis was normal. Bleeding time was three minutes; clotting time six minutes. On December 28, 1936, I did a curettage and supravaginal hysterectomy and bilateral salpingo-oophorectomy. Examination of the interior of the uterus revealed three broad based endometrial polyps rising from the right horn of the uterus Mild chronic salpingitis was also present. Microscopic examination of the polyps showed them to be benign. The operation had been performed

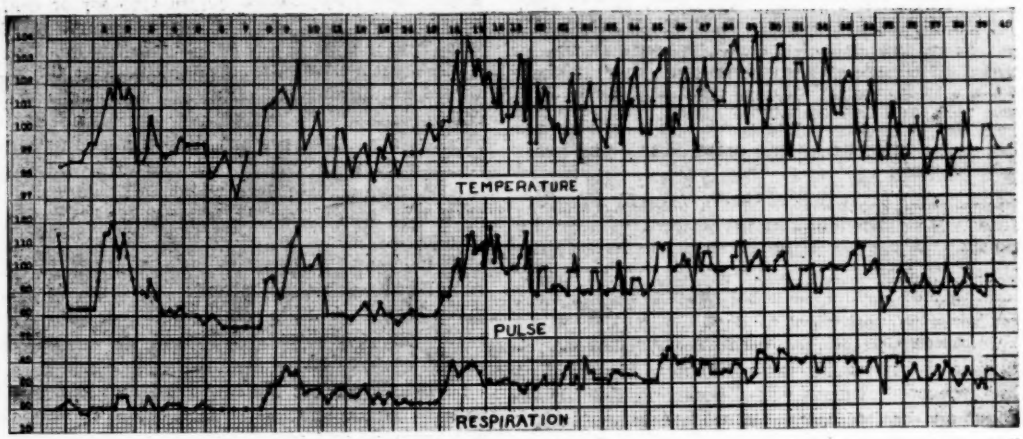

Fig. 1. Graphic chart of patient.

within one hour and thirty minutes, with little blood loss and no appreciable trauma to tissue. Following surgery she reacted quickly to the anesthetic and seemed in good condition. Blood pressure was 110/70. She was given morphine for pain as needed, and prostigmine to prevent distention. Fluids were administered by saline retention enemata and intravenous 5% glucose. She required catheterization only twice.

On the eighth day the patient appeared normal, taking fluids and food well. Her sutures were removed at 10 A. M. and she complained of some pain in the right shoulder and developed a slight cough. The pain gradually increased in severity and her temperature rose to 101.4; pulse to 96. See Figure No. 1. Examination was negative until the next morning when a friction rub was heard laterally in the right chest, over the 7th rib. Her chest was strapped with adhesive and she was given morphine for pain and rest. She felt much better, eating well on the ninth day and from that time on her temperature and pulse became more nearly normal; her cough persisted but became milder and the pain subsided. On the fifteenth postoperative day she complained of sharp pain in the left chest, anteriorly beneath the breast, pain in the shoulder and developed dyspnoea and cough which was productive of a moderate amount of bright red blood. Her blood pressure fell to 80/40. The temperature rose to 104, and pulse to 115 on the seventeenth day. From that time on she ran a septic type of pulse and temperature. She was given morphine for pain, and took fluids well, but had to be forced to eat. She complained bitterly of the pain in her left chest, which was not relieved by strapping, and was generally miserable. She was very apprehensive and suggestions of added therapy were met by extreme nervous upsets at which time her condition became much worse. This is the main reason why oxygen therapy was not given. She felt that she would recover as her husband had had five embolisms following a gastroenterostomy and had recovered. Her condition was very bad and we would not have been surprised to have had her die at any time.

On the 25th postoperative day she complained of pain in her left leg and it was found to be slightly discolored from the foot to above the knee. No temperature changes could be made out. The leg was elevated and ice caps applied. Within two days slight pitting edema had developed, and tenderness was found in the calf, the popliteal space, and the groin. The edema never was marked and gradually subsided as did the symptoms and signs during the next ten days. On the 33rd postoperative day her condiiton seemed much improved and portable X-ray examination of the chest was made. This showed the areas on both sides if the chest which had been involved in infarction. See Figure No. 2. Blood examination on this day revealed haemoglobin of 55%; red cells of 4,200,000; white cells 8,600, with 82% polymorphonuclear cells. She was started on liver and iron therapy. Platelet count was 400,000. On the 36th day her white count was 9,000 with the ratio of segmented to young white cells of only 4.1; this changed on the 38th day to 16:1. During this time the patient was objectively and subjectively much improved.

At 9:40 A. M. on the 40th day she suddenly com-

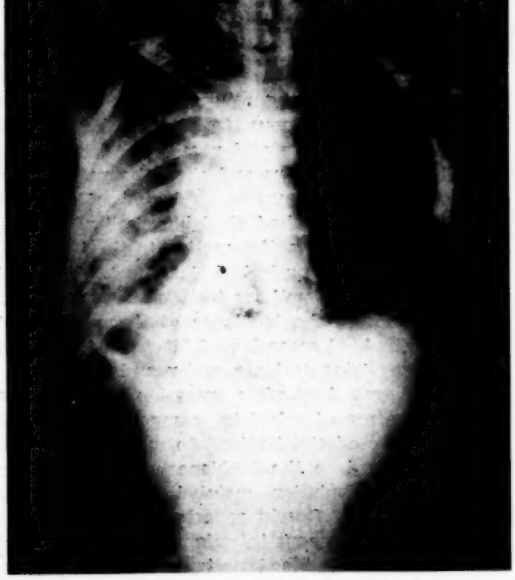

Fig. 2. Roentgenogram evidence of lung infarction.

plained that her heart was beating fast and that she could not get her breath. By the time the nurse got to the bed the patient was pulseless. I happened to be in the hospital and saw her at once, within two minutes of her first complaint. She was pale, and had an exophthalmic stare, was not breathing; no pulse could be obtained. She rapidly became cyanotic, despite immediate administration of oxygen, artificial respiration, adrenalin and caffeine sodiobenzoate. She did not rally and her heart ceased beating at 9:55 A. M. Autopsy was refused. Here, then is a patient who had a nearly normal postoperative course until she had embolism with infarction on the eighth and fifteenth days, and finally, when she was apparently much improved, died suddenly following a massive one on her 40th postoperative day.

In prevention lies the greatest possibility of reducing the mortality from embolism, for once it has occurred, therapy is difficult and futile in about one-half of cases. Unfortunately methods of prevention so far have not been very efficacious,

Surgical patients should be carefully studied and built up to as good condition as possible. Preoperative inanition and dehydration should be combated. Operations other than emergencies should not be performed in the presence of infection. During operation careful hemostasis, avoidance of trauma to tissue by incorporating as little tissue as possible in ligatures and avoiding placing and replacing clamps, will do much to reduce the blood loss, destruction of tissue and shock.

Postoperatively the condition of the circulation should be improved and maintained by intravenous and subcutaneous fluids. It is well to respect the composition of the blood and isotonic saline subcutaneously is more desirable for this reason than large quantities of intravenous salt. As soon as the patient can tolerate fluids by mouth they should be given in large amounts. The patient should be kept warm. He should be given carbon dioxide-oxygen inhalations a few minutes every hour for from 24 to 48 hours to encourage deep breathing and thus facilitate the return of blood from the abdominal veins. Venous stasis in the legs can be prevented by massage and passive motion for the first two or three days and then the patient can indulge in active gymnastics. Gamble. Dalsgaard and others have devised "bed bicycles" which enable patients to get active motion to the lower extremities by pedalling in bed. Results in decreased incidence of embolism have justified these methods.

Konig reduced the incidence of thrombosis and embolism in 4,500 cases from 3.8% to 1.04% by the use of synephrine tartrate orally and hypdoermically for seven days after operation. Others have advised the use of ephedrine compounds. Walters suggested the administration of thyroid extract for 14 days to reduce the incidence of embolism by stimulating circulation metabolism, and inciting greater mobility. Specht reported excellent results from the subcutaneous injection of 20 to 40 c.c. of the patient's own blood postoperatively. Intravenous injections of sodium thiosulphate (Bancroft) heparin (Murray), and calcium chlorate (Martin), have been suggested, but such substances which decrease or prevent the coagulation of blood should be used with caution lest they produce serious effects.

The treatment of thrombosis should be directed toward minimizing embolism and reducing edema. The leg should be elevated, put at rest, an elastic bandage applied to prevent sudden rises in venous pressure from movements. Compresses in the form of aluminum acetate, lead water and opium, ice or heat, may be applied. It is advisable to prohibit movement of the involved leg until at least ten days after pulse and temperature have returned to normal. During this time extreme care must be taken in bathing and using the bed pan to keep from producing embolism. Enemata and massage should be avoided.

De Takats advises limiting fluid and salt intake and the administration of salyrgen to prevent development of and reduce edema. Neuda uses liver injections both for prevention and therapy. Bancroft and Stanley-Brown give 10 c.c. of 10% sodium thiosulphate intravenously for three days to prevent clotting and promote recovery. In some cases improvement seems to follow the use of leeches. Leriche has advised anesthesia of the lumbar sympathetics with procaine to relieve vessel spasm. Ligation of thrombosed veins is advised frequently but in the usual postoperative thrombosis such a procedure is practically impossible.

When embolism has occurred the patient should immediately be given narcotics in large doses, cardiac stimulants, such as strophanthin, adrenalin as needed, and oxygen. De Takats advises immediate administration of papaverine hydrochloride in large doses subcutaneously or intravenously. If embolism is small and results in infarction, medical treatment will suffice. If massive and apparently fatal, oxygen and artificial respiration should be started at once, and continued until no possible hope for recovery is seen. Bieling reports two successful resuscitations after six hours effort. Fluids in the form of saline or sodium thiosulphate may be given intravenously, better into the external jugular vein.

Removal of the embolus from the pulmonary artery was suggested by Trendelenburg, and since that time many attempts have been made to do so; only a few have been successful. Kirschner and Myer have each reported success, and Valdoni has found nine successful cases reported in the literature during the past ten years. It is well to bear in mind the words of Churchill who states: "The surgeon contemplating the performance of the Trendelenburg operation when the occasion may arise must concern himself with many things: prompt and certain diagnosis, an organization for handling the situation as the most pressing of emergencies and finally, the technical performance of an exceedingly difficult and specialized procedure." Delay in the performance of operation in the hope that the patient will recover without it often results in failure due to degenerative processes in the ganglion cells of the brain from ischemia.

but even when done promptly the patient frequently succumbs to pneumonia, pulmonary edema, or further embolism. At the present time for the average surgeon who encounters massive pulmonary embolism more conservative measures remain his hope.

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DISCUSSION

Dr. Preston T. Brown, Phoenix: Dr. Hoffman has elaborated so completely on this subject that there is nothing with which to take issue and little to be added. As a means of prevention of thrombosis an early increase in the activity of the post operative patient and the puerperal mother is to be recommended. In obstetrics the development of bed gymnastics beginning on the first day after delivery is reported by some to have lowered the incidence of thrombosis about 50%. Stimulation of circulation by thyroid extract, by elevation of the foot of the bed, and by avoidance of constrictive binders, aim at the same goal. So far as thrombosis and embolism are due to infection so far does the elimination of these conditions depend on the aseptic conduct of labor and the elimination of unnecessary obstetrical intervention both trivial and major. Retained portions of placenta, a relatively common focus type of infection, has a peculiar predisposition to thrombosis and embolism. This, of course, is to be eliminated by a proper conduct of the third stage of labor. More and more we are coming to see that the grass roots of obstetrics must maintain. The author is to be complimented upon his presentation of such an important subject.

Dr. J. W. Pennington, Phoenix: One of the surgeons from Mayo's recently reported that in a series of cases extending over a period of seven years he eliminated embolism by taking a basal metabolism both before and after operation and administering thyroid extract accordingly. A low temperature and a low pulse rate are found to be preliminary warnings of post operative embolism.

Dr. D. F. Harbridge, Phoenix: It seems to me that this contribution is of unusual interest. Many conditions may contribute to the situations discussed. For those interested in this matter of vascular change, I would recommend the Mutter lecture presented by Prof. George Adami of McGill University on the subject, "Nature of the Arteriosclerotic Process." Much of the laboratory work for

this study was done by Prof. Klotz of the same institution. In order to determine how much the question of emotion and position has to do with the development of thrombosis and embolism and vessel wall changes, Dr. Klotz carried on a series of experiments with rabbits. The rabbits were suspended by the hind legs for varying periods of time with emotional and physical reactions on the vascular system noted. Emotion, and diet as well, have a great influence on the condition of the blood vessels. The fundus oculi is the first place where these changes can be studied during life. It is to be remembered that within the eye, blood vessels are terminal vessels. There is no anastomosis, thus an embolus is usually very destructive to sight.

Dr. H. T. Bailey, Phoenix: The essayist has spoken of the part enemas may have in these cases. I would like to ask whether the absorption of oil enemas may cause embolism and whether in the instance of hemorrhoid the patient should not be given an oil enema before operation.

Dr. Ralph L. Hoffman, concluding: This whole subject is so broad I found it most difficult to boil down. Emotional instability plays a great part in these cases. As suggested by Dr. Pennington there is a low basal, a low pulse, and a low everything as an indication. As to the matter of oil enemas for hemorrhoids, I believe the patient should have relief before the operation. In the case presented, demonstrating certain aspects of thrombosis and embolism, an enema was administered about one hour previous to death. Personally, I feel it was blameworthy. Thank you.

Orchitis of Mumps Without Parotitis

JACK R. HILD, M. D.
Douglas, Arizona

ORCHITIS is said to occur as a complication in 20 to 50 per cent of cases of mumps among male adults.[1] Rarely, the complicating orchitis precedes involvement of the parotids and still more rarely, orchitis may occur alone, presumably as a result of mumps. The occurrence of orchitis of mumps without parotitis occasions considerable difficulty in diagnosis, since we have, thus far, no serological or bacteriological criterion. A presumptive diagnosis must be made on the history of definite contact with a known case of mumps, followed by testicular involvement within the established incubation period for this disease. Other possible causes of swelling within the scrotal sac must be eliminated. The differentiation between orchitis or epididymo-orchitis and epididymitis must be made.

An interesting case of acute epididymo-orchitis, presumably due to mumps, and without demonstrable parotitis, is here reported.

REPORT OF CASE

A white male, aged 14 years, first seen at his home on May 29th, 1937, had noted swelling in the left side of the scrotum two days previously. He stated that his left testicle had been enlarged to about twice the normal size, was hard, and tender to touch. There were no chills, and no elevation of temperature could be detected. The patient was confined to bed and was not seen by a physician. The swelling of the left testicle subsided and was gone on May 29th, when the right testicle became swollen, painful and tender. At this time, it was decided that a physician should be called.

There was no history of tuberculosis, syphilis or malignancy in the family. On May 10th, 1937, the patient's brother, aged 6 years, developed a bilateral parotitis, which ran a mild course and subsided in four days. Subsequently, on June 3rd, 1937, the patient's sister, aged 17 years, developed a well marked, bilateral parotitis. Low grade fever persisted for three days, and swelling of the parotids had entirely subsided in five days. The past history of the patient offered no relevant facts. He had never had diphtheria, but had received diphtheria toxin-antitoxin in 1935. His tonsils had been removed in 1934. At the time of the onset of the patient's illness there was a mild epidemic of mumps among the school children in this community.

When first seen by me, the patient did not appear to be suffering great pain. His temperature by mouth was 99 F. the pulse rate 90 and respiration 20 per minute. The blood pressure was 108 systolic, 68 diastolic. The physical findings of interest were the lack of swelling or tenderness of the parotid glands, with no visible swelling or increased redness of the openings of Steno's ducts, and the enlarged right testicle. The left testicle and epididymis were apparently normal in size and consistency, and were not tender to palpation; the normal groove separating it from the right epididymis could not be detected. The epididymis on the involved side was slightly tender, and felt harder than that of the opposite side. The overlying skin of the scrotum was very red. No area of fluctuation was detected. Tuberculin skin test was negative.

Treatment consisted of support for the scrotum, ice bags and mild sedatives. On June 4th (6 days after onset in the right testicle) the size of the tumor increased and pain became very severe. On the following day (June 5th), it was determined by palpation and transillumination that fluid had collected at the lower pole of the right testicle. After infiltrating the skin with one-half per cent novocaine, 35 c.c. of clear straw-colored fluid was aspirated. The fluid was entirely coagulated within 5 minutes. Tenseness of the tumefaction was definitely relieved, and pain immediately lessened. On the following day (June 6th) the highest temperature was 103 F., and on the next day (June 7th), it had dropped to 100 F. On June 11th, six days after aspiration, the temperature was normal and remained at that level. The swelling of the testicle had gradually subsided, so that its size at this time was about two times normal.

On June 15th, 17 days after onset and 10 days after aspiration of fluid, the patient complained of increased pain. A tender, fluctuant area, 1 cm. in diameter was found at the lower pole of the right testicle, 1 cm. lateral to the point of aspiration. Two days later (June 17th), using local anesthesia, a small incision was made at the point of fluctuation, through the tunica vaginalis and 6 c.c. of bloody, serous material evacuated. A portion of this sero-sanguinous material was cultured on Loeffler's blood serum. There was a small amount of drainage during the next two days, but pain at the lower pole persisted. On June 19th, two days after the incision, there occurred a spontaneous opening

through the skin, 1½ cm. lateral to the incision, and through this opening, sero-sanguinous material drained. Immediately after this spontaneous rupture, pain and tenderness were relieved and swelling decreased. There was a slight extrusion of testicular substance in the opening. On June 25th the size of the testicle was almost normal and the temperature had been normal for two weeks; the patient was allowed to be transported to New Mexico, where his family had moved. A report from the physician who attended him in New Mexico states that on June 28th the right testicle was swollen and painful, with slight drainage from the spontaneous opening. Another abscess formed and on July 1st was incised and drained—the type of drainage is not described. Both openings healed rapidly; swelling, pain and tenderness subsided within a few days. On July 28th the right testicle was almost normal in size, with very slight tenderness; the right epididymis was slightly enlarged. Prognosis for function of the right testicle was thought to be favorable.

LABORATORY FINDINGS

June 7th—the urine was negative except for an occasional pus cell. Stained sediment from a centrifuged specimen revealed no organisms. The blood: hemoglobin 80 per cent erythrocytes 4,800,000 and leucocytes 26,300 per cu. mm., with a differential count of polymorphonuclear neutrophiles 91, small lymphocytes 3 and large lymphocytes 6. The blood Wassermann (Kolmer, 3 antigens) was negative in all antigens. June 18th—leucocytes 10,200 per cu. mm. with a differential count of polymorphonucear neutrophiles 69, small lymphocytes 20 and large lymphocytes 11. Culture of sero-sanguinous material from incision yielded bacilli with morphological and staining properties similar to bacillus diphtheriae. June 20th—sub-cultures identified the bacilli grown from the sero-sanguinous material as "diphtheroid bacilli', as classified and described by Zinsser and Bayne-Jones[3].

COMMENT

Since this case of epididymo-orchitis occurred during an epidemic of mumps in the community, 17 days after the beginning of bilateral parotitis in the patient's brother, and seven days prior to bilateral parotitis in the patient's sister, the presumptive diagnosis is acute epididymo-orchitis secondary to mumps, without parotitis. From the history obtained, there was probably a bilateral involvement, although when seen, only the right testicle was affected. No significance is attached to the finding of diphtheroid bacilli in the material from the incision, since these organisms are frequently found in body fluids and on serous surfaces, without demonstrable pathology.

One method of treatment advocated for severe cases of orchitis secondary to mumps is incision of the tunica vaginalis and multiple incisions of the tunica albuginea, to relieve pressure[3]. Support for the rationale of such a procedure is seen in this case, in that the spontaneous rupture involved the tunica vaginalis and the tunica albuginea, and was followed immediately by relief of pain.

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Dr. Morris Fishbein to Address Arizona State Medical Association Annual Meeting

Dr. Morris Fishbein, Editor of the Journal of the American Medical Association, will address the Arizona State Medical Association before its House of Delegates on Friday afternoon, April 22, during the Annual Meeting of that body. Dr. Fishbein will also address a public meeting on the evening of April 21st at the University Auditorium, according to present plans.

Others appearing on the scientific program of the Annual Meeting will be:

Dr. Albert S. Crawford, Ford Hospital, Detroit, Michigan .....Craneo Cerebral Injuries

Dr. Frank J. Milloy, Phoenix, Arizona.....Occurrence of Peptic Ulcer

Dr. Jay C. Davis, Minneapolis, Minn.....The Effect of Drugs on Coronary Circulation

Dr. Franklin C. Ebaugh, Denver, Colo.....The Relation of Psychiatry to General Medicine

Dr. Stuart W. Harrington, Rochester, Minn.....Tumors of the Breast

Dr. E. C. Houle Nogales, Arizona.....Fractures

Dr. J. R. Hild, Douglas, Arizona.....The Hypertonic Infant

Dr. John H. Woolsey, Woodland, Calif.....Regional Ileus

Dr. Robert S. Flinn, Phoenix, Arizona.....Pleural Effusion

Dr. Preston T. Brown, Phoenix, Arizona.....Toxemias of Pregnancy

Dr. Leslie M. Smith, El Paso, Texas.....Lesions of the Oral Cavity

Dr. John W. Flinn, Prescott, Arizona.....Silicosis

(See April issue for complete list of speakers.)

In addition, clinical programs will be held at local hospitals in Tucson on Friday and Saturday mornings before the general sessions begin. These clinics will include demonstrations of cases, surgical clinics, medical clinics on heart disease, metabolism, etc. Attendance at these clinics will be limited so that it will be necessary to register on arrival for the clinics you wish to attend. Full details will appear in the official program in the April issue of this Journal.

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DAMNED OR ELECT?

In this latter day, sad to acknowledge, it is not enough that a doctor be just that, and no more. Going are the days when the idealism of the medical profession was accepted and respected by an unquestioning, loyal public. All too long have physicians nurtured the rather naive belief that all they had to do was practice the best medicine they knew, and all would be well in this best possible of worlds.

With the dawning of the present Do-Good era, there was ushered on the scene a horde of starry-eyed malcontents who deemed it their Heaven-blest mission to muddy the placid stream of human relations in an effort to uplift something. And most vulnerable to siege stood the honorable profession of medicine, whose members seemed to have their minds and their hands busily occupied in a field of work far above the level of petty agitations. The Do-Gooders of America, seemingly wholly unaware of the status of American medicine in leading the entire world in that science, have of late increased their clamor for changes in the time-approved methods and ways of American medicine.

Someone in Podunk needed to have his appendix out, and he didn't get the Hollywood stitch on his belly. Someone in Wallaville needed glasses, and he didn't get platinum rims. Someone in Possumburg needed a Packard for his night work, but he couldn't make the down payment. Someone in Goose Hollow didn't have silk underwear. But there was an enterprising fellow in Hill county, who, having saved his hard-earned money, could afford these things, and had them. So the blood rushed to the heads of the Do-Gooders. These things must not be, a change must be effected, an agitation must be started. Now, if everyone were brought to a common level there still would not be Hollywood stitches, platinum rims, silk underwear and Packards for all. Nor would all the wishful thinking in this wide world alter that fact one whit. The likelihood is that there would be none of these desirable rewards for any one. So it comes to the inescapable conclusion that if the roof leaks in one of the rooms, the Do-Gooders offer the remedy of pulling the whole house down about the tenant's ears.

The wrecking crew is an articulate group. Through committees, commissions, omissions, articles, editorials, speeches, and loud windstorms they make demands, utter threats, ask fool questions, voice ill-considered ideas, and so on, ad nauseam.

In the face of those at the control of the bag of winds must the profession of medicine remain forever breathless, speechless? Who has any better right to suggest changes as they become needful than the man most concerned—the physician? Does he, because of the high plane of his calling, need to be inarticulate in the face of the present storm? Shall he forswear an apologist? Doesn't he have a side to the controversy that should be made generally known?

Such a powerful, timeless entity as the Roman Catholic Church has long known that apologists are needful. The attitude of the Church on any question affecting it may be and is quickly made known. But should not duly elected leaders of The American Medical Association stand ready to do our battles? The answer is: They are ready, and when the medical profession at large indicates to them a desire for help it is forthcoming. But widespread apathy in the ranks ties the hands of the officials. It's time for the American physician to let his temperature go, tune up a bellow and start placing punts on a batch of seats that need some Do-Gooding themselves.

Once men of medicine were the elect. Are they now to be the damned?

EDUCATION—A CUMULATIVE POSSESSION

Pitiable to educated minds is the plight of the man who, having been beckoned by learning, listened momentarily, then turned away. Not difficult to recall are the names of some of our colleagues who shut their minds to further education the day they received their hard-won diploma. New books, meetings, current journals, conferences—all these remain an unknown world to the satisfied mind.

One of the most exciting aspects of Medicine is the constant change in thought, the opening of new fields of research, the remarkable scientific

advances from month to month. An inquiring mind such as the physician should possess, may find prodigious adventure in the effort to keep abreast of the mighty current of new ideas and new discoveries in the sphere of modern medical science.

Like diamonds in the polishing, scientific minds must be whetted one against the other to bring out the many brilliant facets inherent in that type of intellect. The diamond in the rough is just that, potentially valuable, but worth infinitely more when properly polished. Likewise, the unpolished, incomplete scientific mind only bears potentialities, must be rubbed and refined before its inherent qualities can be available.

Two methods exist for physicians to gather in scientific conference. One, not practical of accomplishment by most, is to spend a prolonged period as an enrollee in a medical college, doing advanced research. The other, within the reach of all men, is to gather with one's colleagues at the various state, regional and national meetings. For the purpose of these conclaves is to afford post-graduate education to the physician in the field, often far-removed from the great medical centers. These are the men who bear the largest share of the load of caring for the health of the general population. These are the men who in the final analysis apply the theories propounded in the teaching centers. These are the men to whom the public turns for the latest, the best in treatment. And these then are the very men who need post-graduate education the most.

No physician can conscientiously be false to his basic scientific training. He can not allow his policies against mental mediocrity to lapse. He must keep those policies up to date by regular attendance at post-graduate sessions. Realization must come to him that education is not a static thing, once tasted, to be neglected. He must continually add to, build on his early foundations. For education is cumulative, and it is that or nothing, for it shuns the incurious mind.

ANNUAL MEETING OF THE ARIZONA STATE MEDICAL ASSOCIATION

The Pima County Medical Society will be host to the Annual Meeting of the Arizona State Medical Association convening on April 21 22, and 23 next, with Dr. C. A. Thomas of Tucson in charge of local arrangemnts. Serving on the committee arranging the scientific program are Dr. Hal W. Rice of Bisbee, President-elect and Chairman of the committee, and Drs. W. Paul Holbrook of Tucson, A. C. Carlson of Jerome, and Frank J. Milloy of Phoenix. A program of exceptional merit has been arranged with a cordial invitation being extended to members of adjoining state medical associations to attend.

Elsewhere in this issue of the journal will be found a list of the speakers engaged to appear before the three-day session. Several of the most noted medical leaders in America are to attend.

The April number of SOUTHWESTERN MEDICINE will publish the complete program.

LEADERSHIP FOR COUNTY SOCIETIES

The Board of Trustees of the American Medical Association has passed the following resolutions:

WHEREAS, *A varying number of people may at times be insufficiently supplied with needed medical service for the maintenance of health and the prevention of disease; and*

WHEREAS, *The means of supplying medical service differ in various communities, be it*

Resolved, That the American Medical Association stimulate the state and county medical societies to assume leadership, securing cooperation of state and local health agencies, hospital authorities, and dental, nursing and correlated professions, welfare agencies and community chests in determining for each county in the United States prevailing need for medical and preventive medical service where such may be insufficient or unavailable; and that such state and county medical societies develop for each county the preferable procedure for supplying these several needs, utilizing to the fullest extent medical and health agencies now available, in accordance with the established policies of the American Medical Association. Be it further

Resolved, That the Board of Trustees of the American Medical Association establish a committee to cooperate with the Bureau of Medical Economics in outlining the necessary procedures for making further studies and reports of the prevailing need for medical and preventive medical services; and that the Secretary of the American Medical Association arrange to develop such activities through the secretaries of state and county medical societies in each instance urging the formation of special committees in each county and state where committees are not available for this purpose.

Suitable blanks for reporting surveys to Chicago headquarters will be made available to County Societies.

The above principles were embodied to a great extent in the Westchester County proposals, reviewed in an editorial in February in these columns. The Medical Society of the County of Westchester, N. Y., summarize their beliefs as follows:

1. Organized medicine should favor such programs as will make good medical care more available than at present—by improved economic arrangements.

2. Lay agencies must confine their functions to the non-medical aspects of any plans for that purpose.

3. The medical aspects of such plans must be absolutely and solely in the hands of the organized medical profession.

4. These two functions must be kept clearly inviolate and the status of the organized medical profession firmly established by suitable legislation.

Preliminary study fails to reveal quarrelsome points in such a program. At last the private practitioner is to be given a voice.

Special Section

Arizona State Medical Association

J. D. HAMER, M. D.
Associate Editor

TUBERCULOSIS AS A PUBLIC HEALTH PROBLEM

W. D. GILMORE, M. D.
Phoenix, Arizona

When we consider a disease from a public health standpoint certain factors tend to minimize or magnify its importance. These are: (1) The prevalence of the disease; (2) The facilities available for a timely diagnosis; (3) Its contagiousness; (4) Its mortality rate; (5) The economic loss entailed by the disease; (6) The preventive and curative measures available for its control; (7) The practicability of these for its prevention and cure.

Tuberculosis when considered from each of these angles or from all collectively is our most vital public health problem.

I. Tuberculosis is prevalent in every section of the country, in every station of life, in every race and at all ages. It is no respector of persons. However, the age group most frequently and most seriously disabled is the young or early adolescent group. In this group, at the most productive period of life—between 15 and 40 years of age—it causes more deaths than any other disease. The insidiousness of its onset, the scarcity of symptoms in this age group have been responsible heretofore for a delayed diagnosis in practically all cases, delayed until the disease had reached a far advanced stage, often an incurable one and until there had been ample time and opportunity for its spread to many others. The contagiousness of tuberculosis may extend over a period of many, many years in any open case. This is one of the chief reasons for its wide-spread prevalence.

II. But our facilities for diagnosis of tuberculosis today are adequate for an early diagnosis; of practically every case. In order to do this we must get out and look for the disease before it declares itself, before signs and symptoms are present, while it is curable and before there has been opportunity for its spread. Tuberculin testing with x-ray films of all positive reactors at frequent enough intervals will make possible such a timely diagnosis of practically all cases. When and if this is universally done far advanced cases of tuberculosis will not be found. Such a program will necessarily involve the expenditure of considerable funds, it will require time and concentrated effort. But it would require less expenditure on any or all of these than would be necessary to treat the number of far advanced cases, found today and the results would be far better.

III. Contagiousness of tuberculosis is now known to be the only source of its spread; every case of tuberculosis is a direct result of another open case by contact exposure. The exposure and contagiousness may exist in any given case for a longer period of time than is true of any disease. Tuberculosis is one disease which does not produce immunity by a first infection. The concensus of opinion today is that a first infection acts as a menace to one exposed to a re-infection; in any case the same individual may be repeatedly re-infected and it is generally agreed that the dosage is an important factor in causing clinical disease. With the many cases around us that have not been diagnosed, and with many others diagnosed but untreated and even denied in many instances, this contact exposure is a serious menace to public health.

IV. The mortality rate, as stated, is greater during that period when economic values are higher than it is from any other disease. This need not be true, it would not be the case if we are making use of the knowledge we have and were making an early diagnosis and instituting the proper treatment in time. When an early case of tuberculosis is found prompt and active treatment should be instituted. In the vast majority of cases this means some type of compression therapy. The older methods of treatment, bed rest, good food and fresh air, while necessary adjuncts to treatment are not sufficient within themselves. To depend on these alone and wait, hoping the patient will recover usually means waiting until complications have developed and satisfactory collapse therapy is more difficult or impossible. Such procrastination in instituting proper treatment invites many complications, thickened and adherent pleura, thick walled cavities, a spread of the disease in the contralateral lung and to other organs, all of which makes treatment more difficult and prolonged and with less assurance of proving effective. Such adherence to the older methods of treatment as well as diagnosis has been a major factor in our exceptionally high mortality rate from tuberculosis.

V. The same may be said of the economic loss entailed by this disease. When once a case reaches the far advanced stage treatment is necessary over a longer period of time, the patient is incapacitated longer, he is a menace to others longer and more funds are expended for his care than is true of any other disease. At the same time the chances for a cure of these cases are greatly reduced and their death rate is materially increased. With an early diagnosis and the proper treatment

of all cases this economic loss could be reduced to a minimum. Fewer beds would be required in sanatoria for these patients, the turn over in these institutions would be much more rapid and thereby a larger number could be accommodated with the same or less expenditure of funds. After a few months patients handled in this manner should have received the necessary training in the prevention of the spread of the disease, should have the proper mechanical lung rest instituted and be able to return to their homes, and in most cases pursue some gainful occupation while completing their cure. Thorocoplasties, which have proven a life saver to many, have restored many to health and happiness that otherwise were doomed to a hopeless existence and death, would be rarely if ever needed.

While we have no safe and accepted immunizing agent for tuberculosis, we have sufficient means for its control, sufficient even for its ultimate eradication. An early diagnosis with the proper treatment promptly instituted would prove a guarantee against far advanced disease and would reduce our death rate to a minimum, and at the same time would remove the source of danger from others.

VI. The practicability of the use of our present knowledge and the agencies mentioned for the control of tuberculosis must depend on several factors: (1) The dissemination of the modern concepts of tuberculosis control to the public. (2) The more general acceptance and employment of such methods by private physicians. The private physician must become an active part of our tuberculosis control program if it is to succeed. He is the one who can be of greatest assistance in any case finding project and without such a project no control program can do a maximum amount of good. It will devolve upon him to help prevent the spread of the disease; it should be his privilege and duty to continue treatment when once instituted; it must be his guidance that safely rehabilitates the patient. He should understand the importance of a selective collapse of the diseased lung", he should be able at least to continue pneumothorax treatments when once induced, after the patient has been returned to his home. He should be capable of referring those cases who might need later some more drastic type of surgical lung compression. Such an understanding and co-operation on the part of private physicians would prove our most effective means of compensating for our lack of sanatorium beds. Funds should be supplied with which to at least partially compensate these private physicians for their effort and time. Centers should be established for intensive study of the diagnosis and treatment of tuberculosis for his benefit. Such a provision together with the assurance that he would be deprived of his private patients for a far shorter period of time, if at all, than has been the case heretofore would stimulate these private physicians to better equip themselves and take a more active part in our tuberculosis control program.

This problems resolves itself into a question which not only involves the saving of human lives but is of great economic significance as well. Would it not be better to spend the same or less funds in looking for tuberculosis, making an early diagnosis, segregating the active cases and instituting proper treatment with the best chances for a complete cure, rather than to wait as we have done until these cases are well advanced and spend this money for their care with far less prospects for a cure? The answer is obvious.

As a solution for this most vital public health problem the following is offered as a general outline:

(1) Use the tuberculin test for all school children, taking x-ray films of the positive reactors, but concentrate on the teen age groups and on known contacts. (2) Establish diagnostic clinics in each community. (3) Invite and urge private physicians to take an active part in all such clinics, and also in a general case project; (4) Supply funds from State and Federal sources with which to pay for films and other expenses that could not be borne by certain patients. (5) Work out a schedule of fees whereby private physicians could afford to take such an active part in our tuberculosis control program. (6) Establish short postgraduate courses for the study of diagnosis and treatment of tuberculosis especially for his benefit.

Regret it as we may and do, the fact remains that the death rate from tuberculosis is approximately five times as high in Arizona as for the country at large, to be exact 271.2 per 100,000 population for Arizona against 55.4 per 100,000 for the entire country. And for the first time in many years there was a general increase in death rate in 1936 over that for 1935, 0.9% for the country at large while this in Arizona was 11.8%. Ultimately such a mortality rate from a preventable and curable disease must mitigate against the migration of the most desirable type of health seekers to the state, the type that have, can and will prove a real asset to the commonwealth. As an inducement to these, as a means of capitalizing one of our most valuable assets, our climate, we should get busy and endeavor to find a better solution of this health problem.

Arizona State Board of Health. (Read before the Santa Cruz County Medical Society, December, 1937.)

SOCIETY ELECTIONS

COCHISE COUNTY MEDICAL SOCIETY recently elected to office Dr. C. C. Piepergerdes of Bisbee president, and Dr. Joseph Saba of Bisbee as Secretary.

PIMA COUNTY MEDICAL SOCIETY: Dr. Meade Clyne, President; Dr. Alvin Kirmse, Secretary.

GRAHAM COUNTY MEDICAL SOCIETY: Dr.

H. A. Riklin of Safford, President; Dr. M. W. Westervelt of Pima as Secretary.

NAVAJO COUNTY MEDICAL SOCIETY: Dr. Paul D. Sprankle of Winslow, President, and Dr. Wm. G. Morton of Winslow, Secretary.

GILA COUNTY MEDICAL SOCIETY: Election of officers for Gila County Medical Society resulted as follows: President, Dr. R. D. Kennedy, Globe; Vice-president, Dr. Cyril M. Cron, Miami, and Secretary-treasurer Dr. Nelson D. Brayton, Miami.

ARIZONA STATE MEDICAL ASSOCIATION ACTIVITIES

Members of the Program Committee for the Annual Meeting of the Association met at Phoenix on February 6 and attended to the final details of the scientific section. In attendance were: Dr. Hal W. Rice of Bisbee, Chairman; Drs. W. Paul Holbrook, Tucson; Frank J. Milloy, Phoenix, and A. C. Carlson, Jerome.

Attending a meeting of the Committee drafting revisions for the State Association Constitution and By-laws were: Drs. C. R. Swackhamer of Superior, Hal W. Rice of Bisbee, and J. D. Hamer of Phoenix. This meeting was held at Phoenix on February 6.

The Industrial Relations Committee of the Arizona State Medical Association met in Phoenix on February 6 to consider various medical and surgical problems before this committee and the Industrial Commission of the State. In attendance were: Drrs. C. R. Swackhamer, Superior; R. D. Kennedy, Globe; Meade Clyne, Tucson; A. C. Carlson, Jerome; W. W. Watkins, Phoenix; E. C. Houle, Nogales, and D. F. Harbridge, Phoenix.

All committees of the Association have been most active during recent months furthering the work of the Association with recent sessions held by the Committee in cooperation with the State Welfare Sanitarium under the chairmanship of Dr. E. W. Phillips of Phoenix, and members, Drs. S. H. Watson, Tucson; Z. B. Noon, Nogales; George Thorngate and Kent Thayer, Phoenix.

Under the direction of the Committee on Child and Maternal Health, in conjunction with the Arizona Board of Health, post-graduate courses in Obstetrics and Gynecology were conducted during the month of February. This committee consists of Drs. F. C. Jordan, Phoenix, Chairman; and members, Preston T. Brown of Phoenix, C. V. Barley of Tucson, C. E. Yount of Prescott, and George Thorngate of Phoenix.

The Annual Meeting of the Arizona State Medical Association will be held in Tucson, April 21-22-23, 1938.

The Annual Meeting of the New Mexico Medical Society will be held in Santa Fe, June 6-7-8, 1938.

Guy Clifford French

In the passing of Guy Clifford French, eminent surgeon with practice located at Phoenix, the Arizona State Medical Association has suffered a distinct loss as Dr. French was deeply interested in the activities and problems of organized medicine. The following resolution as adopted by the Staff of St. Joseph's hospital, Phoenix, fittingly expresses the sentiments of the State Medical Association:

RESOLUTION

In the death of Dr. Guy C. French on January 31, 1938, this Hospital has suffered a very definite loss. Few practitioners who have located in Phoenix have won such universal respect and confidence from their conferees. This is attested by the fact that in his sixth year of practice in Phoenix he was elected president of the Maricopa County Medical Society, having served as its secretary during the preceding year. In his seventh year of practice here he was elected chairman of this Staff. Prior to his selection as chairman of the Staff he served two years on the Executive Committee, where he contributed outstanding service in organizing and directing the training of interns.

Dr. French was in the prime of life, at the age of 44, and was just coming into success in his practice, after many years of struggle against sickness and adversity. He was born in Illinois in 1893, and took his preliminary education in the Eastern Illinois Normal School where he trained himself for teaching. He taught in the High School of Mill Shoals, Ill., until the World War, when he enlisted and served as a boxing instructor. After his discharge he was a cashier of a bank at Golden Gate, Ill. In 1922 he decided to study medicine. Though this decision came late in life, he then being 29 years old, he entered St. Louis University School of Medicine from which he graduated in 1926. He had married in the meanwhile (1924) and doubtless felt the need of establishing himself in practice, but this did not lead him to shorten his training; he prepared himself for the practice of surgery by three years of postgraduate work in the St. Louis University Hospital (1926 to 1929). He came to Phoenix in 1930 and was associated with Dr. W. O. Sweek for three years. In 1933 he entered into independent practice here and won the respect and confidence of the medical profession of the community to a very remarkable degree. He served on the Executive Committee of the Staff of this Hospital in 1935 and 1936, where his experience as a teacher, gained early in life, and his long hospital training made him peculiarly fitted for the difficult task of organizing and directing the training of interns. He was elected chairman of the Staff for 1937, and entered upon his duties with great enthusiasm. He had only begun to serve in this capacity when he was taken ill and went to the Mayo Clinic last May. After several operations, he returned to Phoenix in October for his convalescence which he expected would proceed uneventfully. However, complications developed during the last week of January and his promising career came to an end rather suddenly on January 31st. He is survived by his widow and four children.

It is entirely fitting and proper that the Hospital Staff should express its sorrow as a group, in the untimely death of a conferee whom we all admired and honored. We join with the family and relatives in mourning the passing of a friend and comrade.

All members of the Southwestern Medical Association, of which Dr. French was a devoted member and active participant, will join with the Arizona State Medical Association in subscribing to the sentiments expressed in the above Resolution.

MISCELLANY

MEDICAL CARE FOR THE DESTITUTE

The subject of medical compensation for services to low income groups of the population is said to be less burning, less ready for explosion, in the South than in any other part of the Union. To permit free discussion of economic problems by physicians, Dr. Harvey F. Garrison, of Jackson, Mississippi, Councilor of the Southern Medical Association, and recently President of the Mississippi State Medical Association, two years ago inaugurated a meeting of presidents and officers of state medical societies, to be held during the Southern Medical Association's annual meetings. The two meetings which have resulted have been well attended and most enlightening. In his able address before this group in New Orleans in December, Dr. Garrison expressed the feeling of a majority of practicing physicians in his condemnation of government-controlled health insurance programs now operating in England, France, Germany and other foreign countries. Dr. Garrison added:

"The threat of a nationally controlled plan of health insurance is at our door. Any attempt to encourage the lay population of this country in the belief that the care of its health is largely the function and responsibility of the government is pernicious, dangerous, and obstructive to progress."

In the past few years the government has undertaken the feeding of a huge group of the population. A population which cannot feed itself obviously cannot pay doctors' bills. According to social service agencies many persons on relief could become self-supporting if they had medical attention.

There have been put in operation in the past year in several states programs for the provision of medical aid to indigent families by government supervised cooperative plans. The Board of Censors of the Medical Association of the State of Alabama has just approved a program providing medical attention for certain destitute families in rural communities. It is typical of other projects being undertaken.

Certain families under the Federal Resettlement Administration are to be established on farms. The families under consideration have average total assets of $3.05. The program is to lend them funds for a year's necessities: food, clothing, and shelter, agricultural implements, livestock, seed, fertilizer, and medical care. Ordinarily they could pay nothing for a physician's services. Under the arrangement authorized they are to pay a maximum of twenty-five dollars per year per family, less in some states, this to cover home and office visits of the physician, simple drugs and obstetrical care, not surgical operations or hospitalization. The county medical societies are to be asked to furnish a list of physicians willing to undertake this work and the patient is to be permitted free choice from the list. The physician will thus receive a small compensation for a year's sevrices to families which would otherwise be charity patients.

There are approximately ten thousand families under the rural rehabilitation division of the Resettlement Administration in Alabama, distributed through every county but one. Government, in rehabilitating them, prepares a budget for each and supervises its expenditure. It specifies exactly how much lard, bacon, lean meat, meal, flour, sugar, jam, coffee, molasses, soda and spice, tobacco, how many overalls, socks, undergarments and what medical care each family should purchase.

Physicians are told that their compensation is obviously inadequate, but that neither do these families receive as much food or clothing as they need; that the medical services should be proportionate to the standard for other necessities. The difficulty here is that the physician usually knows how to practice only one variety of medicine. Its quality cannot be strained. This fact may tempt self-sustaining neighbors of families in the rural rehabilitation program to demand a similar type of service.

The aim of the program, however, is to lift these destitute families into the class which owns property, is able to purchase its own provisions, and pay its own medical bills. If the project is successful, it should eliminate itself or greatly curtail its activities in the course of a few years instead of expanding The experiments in rehabilitation and in distribution of medical care will be watched with much interest by the country at large.

So. Med. J., Feb., 1938.

NUPERCAINAL-"CIBA" NOT ACCEPTABLE FOR N. N. R.

Nupercaine-Ciba (the hydrochloride) has for some time stood accepted by the Council as a local anesthetic. At the request of the distributor, the Council in 1931 took up consideration of the base, which at that time was marketed in the form of Nupercaine Ointment 1%. On account of the danger from the use of powerful anesthetics by the public the Council objected to the unsupervised use of Nupercaine for sunburn and burns. When informed of the Council's objection the firm asked that the consideration be withdrawn and was informed that the procedure of the Council did not permit "withdrawals" of consideration but that it was the Council's duty to inform the medical profession of any objectionable features if the product was still on the market.

Subsequently, the firm changed the name of the product to "Nupercainal-Ciba" and circularized the medical profession widely. When this wah brought to the attention of the Council, packages were purchased on the open market, and it was found that the objectionable claims were still maintained and that the trade package contained the names of diseases. The firm was informed of this and further of the Council's objection to the coined proprietary name "Nupercainal." The Council's objection to the name is based on the fact that it tends to confusion and is against the public interest. It does not make clear that the active ingredient is Nupercaine, and further it creates the impression that the preparation is some chemical derivative of Nupercaine instead of being a simple mixture.

Some correspondence ensued in which the firm agreed to abandon the objectionable claims and to revise satisfactorily the trade package, in the end deleting from the label and tube claims which had been found objectionable and submitting a trade package to attest the omission of the trade package circular to which objection had been made. The firm, however, refused to meet the Council's objection to the name. The Council was therefore compelled to declare the product unacceptable for N. N. R. The firm was informed that the advertising for Nupercainal must be kept quite distinct from that issued for Nupercaine, else the acceptance of the latter might be jeopardized.

—J.A.M.A., 5 Feb., 1938.

The Annual Meeting of the New Mexico Medical Society will be held in Santa Fe, June 6-7-8, 1938.

ANNUAL MEETING OF
ARIZONA STATE MEDICAL ASSOCIATION
APRIL 21, 22, 23, 1938

Headquarters at Santa Rita Hotel
Tucson, Arizona

Something different has been planned by the Program Committee this year. Instead of a smoker the first night (Thursday) there will be a buffet luncheon and we will retire to the University Auditorium where Dr. Morris Fishbein will give a public address. We are planning a national hook-up for his talk. At this early date the subject of his address has not been announced, but it will be something of vital interest to the profession and the people of the Southwest.

On Friday night the Annual Banquet and Dance will be held at the Santa Rita Hotel.

The meeting will be finished by Saturday noon. If a sufficient number wish it, the Southern Pacific Company will make up special cars or a special train to carry a group to Guaymas, Mexico, for a fishing trip of a few days.

On the other hand many may prefer to remain over Saturday night, and have the Annual Smoker until the "wee small hours."

Elsewhere you can find the roster of the Scientific Program. Note the outstanding speakers and the luncheon talks to be conducted by these men, which is a departure from the usual program. For the first time there will be morning clinics, held in the various Tucson hospitals.

The program being so full, the various meetings will start and stop promptly so there will be no lagging at any time.

The Tri-State Rotary Convention will start here Sunday, April 24, 1938, following ours. Those of you who are Rotarians bear that date in mind, and make a real holiday of it.

Exhibitors can obtain blue prints and specifications of the lobby of the Santa Rita Hotel from:

DR. ALVIN KIRMSE
11 East Pennington St.,
Tucson Arizona

NEWS

General

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The general oral, clinical and pathological examinations for all candidates (Groups A and B) will be conducted by the entire Board, meeting in San Francisco, California, on June 13 and 14, 1938, immediately prior to the meeting of the American Medical Association.

Application for admission to the June, 1938, Group A examinations must be on an official application form and filed in the Secretary's Office before April 1, 1938.

The annual informal Dinner and General Meeting of the Board will be held at the Palace Hotel, San Francisco, on Wednesday evening, June 15, 1938, at seven o'clock. Dr. William D. Cutter, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, will be the guest speaker, and the Diplomates certified at the preceding days' examinations will be introduced individually. All Diplomates are invited to attend the dinner meeting, and to bring as guests their wives and any persons interested in the work of the Board.

For further information and application blanks address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

The officers of the American Public Health Association announce that the 67th Annual Meeting will be held in Kansas City, Mo., October 25-28, 1938.

Dr. Edwin Henry Schorer, Director of the Kansas City Health Department, has been appointed Chairman of the local committee. He will be assisted by a large group of city and state officials and community leaders.

The American Board of Ophthalmology announces that in 1938 it will hold examinations in—

San Francisco, June 13th, during the American Medical Association;

Washington, D. C., Oct. 8th, during the American Academy of O. and O. L.

Oklahoma City, Nov. 14th, during the Southern Medical Association.

The American Board of Ophthalmology has established a Preparatory Group of prospective candidates for its certificate. The purpose of this Group is to furnish such information and advice to physicians who are studying or about to study ophthalmology as may render them acceptable for examination and certification after they have fulfilled the necessary requirements. Any graduate or undergraduate of an approved medical school may make application for membership in this Group. Upon acceptance of the application, information will be sent concerning the ethical and educational requirements, and advice to members of the Group will be available through preceptors who are members or associates of the Board. Members of the Group will be required to submit annually a summarized record of their activities.

Applications should be filed immediately. Required number of case reports must be filed at least sixty days prior to date of examination. Application blanks can be procured from Dr. John Green, 3720 Washington Ave., St. Louis, Mo.

The Western Branch of The American Public Health Association meets June 6, 7 and 8, in Portland, Oregon. These dates immediately precede the annual Rose Festival in Portland so that members wishing to do so may stay over for that occasion. Those wishing to attend the American Medical Association meeting in San Francisco will have ample time to reach there before the meeting opens on June 13. Those wishing to proceed to the National Tuberculosis Association meeting in Los Angeles will then have ample time to do so before that meeting commences on June 20.

More than double their present supply of radium is needed for treatment of cancer by leading United States hospitals in the East and Middle West, according to hospital authorities interviewed in a regional survey.

The survey covered leading hospitals and medical institutions from New York City to Minneapolis and St. Louis.

Approximotetly 82 grams of radium are now held by the 213 hospitals in 47 cities surveyed. About 109 more grams are needed to meet treatment demands, authorities of these hospitals estimated. With radium now priced at about $25,000 a gram, the present holdings of these hospitals have a market value of approximately $2,050,000. The additional supply which hospital authorities estimate is needed would cost at present prices about $2,725,000. Fewer than 100 of the hospitals owned any radium at all.

Largest single radium holder is Bellevue Hospital of New York City with nine and one-half grams; another New York City hospital, Memorial Hospital, is second with eight and nine-tenths grams. Other hospitals with large radium supply are: State Institute for the Study of Malignant Diseases, Buffalo, N. Y., 8¼ grams; Michael Reese Hospital, Chicago, 6½ grams; Howard A. Kelly Hospital, Baltimore, 5 grams; American Oncologic Hospital, Philadelphia, 4½ grams; Hines U. S. Veteran's Hospital, Hines, Ill., 3 grams.

The U. S. Public Health Service will receive applications for positions as second year interns for appointment on or after July 1 or sooner if there are vacancies. Physicians are eligible who are not over 30 years old and who have or will have completed one year's internshmip following graduation at an approved hospital by next June. No written examination will be required. Candidates appointed for duty at marine hospitals or at U. S. narcotic farms will receive a gross pay of $1,800 a year, from which a deduction will be made if quarters, subsistence and laundry are furnished. Those assigned to federal penal and correctional institutions will receive $1,620 a year, from which $240 will be deducted if quarters, subsistence and laundry are furnished. Persons wishing to apply should communicate with the surgeon general, U. S. Public Health Service, Washington, D. C., stating that they are interested in a second year internship.

The medical staff of the Menninger Clinic will conduct its fourth annual Postgraduate Course on *Neuropsychiatry in General Practice*, April 25 to 30, inclusive, at the Menninger Clinic, Topeka, Kansas. The course this year will include a brief introduction to the fields of neurology and psychiatry and a specific application of this knowledge to the large group of cases of psychoneuroses, psychoses and psychogenic and neurological disorders which every physician meets in his daily practice. Suggestions made by those who took the course last year have been embodied in this year's program in order to make it applicable to the most common practical problems of the physician.

As in previous years, several guest speakers, prominent in the fields of neurology and psychiatry, will appear at the evening sessions of the course.

Arizona

The regular meeting of the Maricopa County Medical Society for February was given over to the following scientific program: 1. "Diagnosis of Bladder Neck Obstruction," by Dr. John W. Pennington, (a) "Medical Treatment" by Dr. H. D. Ketcherside, (b) "Surgical Treatment," by Dr. H. M. Purcell. 2. "Complication, Sequella, and End Results," by Dr. M. Matanovich. (a) "Carcinoma of Prostate," by Dr. M. L. Day.

A special meeting of the Maricopa County Medical Society was held on February 9 with a program on "Citri-Culture in Its Relation to Health." Dr. L. E. Detrick, Research Assistant for the University of California at Los Angeles, and A. J. Lorenz, Director of Nutritional Research for the California Fruit Growers Association, addressed the meeting which was open to the public and well attended.

El Paso

The Texas Tuberculosis Association meets in El Paso April 15 and 16.

Speakers who will be here for the meeting include: Dr. J. Arthur Myers of New York, president of the National Tuberculosis Association; Holland Hudson of New York, director of rehabilitation of the N. T. A., and Dr. L. J. Moorman of Oklahoma City.

Dr. Samuel F. King, 74, El Paso resident for over 30 years, died February 6, 1938. He was associated at one time with the late Dr. R. L. Ramey and with Dr. H. H. Varner of El Paso.

Dr. King was born in Grayson County, Texas, in 1863. He attended Louisville University medical school at Louisville, Ky. He practiced medicine in Sherman, Texas, before coming to El Paso.

Survivors are: Mrs. Sally Battle King, his widow; a sister, Mrs. W. L. Bradford of Colorado Springs, and a nephew, Dr. Sam F. King of El Paso.

At the bi-monthly meeting of the El Paso County Society on February 14, the following program was given:

The Use of Sulphanilamide in:

1. Pneumonia .....Dr. J. E. Morrison
2. Genito-urinary Infections and Gonorrhea .....Dr. W. R. Curtis
3. Streptococcus Throat.....Dr. M. P. Spearman
4. Skin Manifestations as Complications.....
.....Dr. L. M. Smith

New Mexico

The regular January meeting of the Grant County Medical Society was held at Newell's in Silver City, New Mexico, on January 28, 1938.

The following officers were elected to serve for the year of 1938:

President—Dr. R. E. Watts, Silver City, New Mexico.

Vice-President—Dr. A. E. Gill, Silver City, New Mexico.

Sec'y.-Treas.—Dr. B. A. Johnson, Santa Rita, New Mexico.

Delegate to State Society—Dr. J. C. Mitchell, Silver City, New Mexico.

Alternate Delegate—Dr. B. L. Jones, Ft. Bayard, New Mexico.

Board of Censors—Dr. David Kramer, 1 yr; Dr. R. C. Lane, 2 yrs.; Dr. N. D. Frazin, for 3 yrs.

The following clinical program was presented:

Dr. Henry Safford, Jr., of El Paso, Texas, read a complete and comprehensive paper on "Anal Fistula," illustrating with lantern slides the various types and methods of treatment.

Dr. Louis Breck, of El Paso, Texas, discussed in detail many of the problems that arise in "Fractures of the Forearm and Lower Leg." His talk was accompanied by lantern slides showing conditions that occur and method of dealing with them.

The above papers were generously discussed by the members present.

Dr. A. A. Wolffson, of Hanover, New Mexico, made application for membership in the Society. This was referred to the Board of Censors.

Dr. H. C. Dodge, Commanding Officer of Ft. Bayard, N. M., extended an invitation to the Society to hold their meeting at the Officers Club at Ft. Bayard. It was decided to hold some of the meetings there and some in Silver City.

AUXILIARY NEWS

Bernalillo County

(New Mexico)

Although the usual meeting time for the Bernalillo County Auxiliary is the last Monday of each month, the Christmas holidays forced the omission of the December session.

The regular January meeting was occupied with the making of plans to welcome the national president of the Woman's Auxiliary to the American Medical Associaiton, who is to arrive in Albuquerque on February 15. Entertainment was offered at the home of Mrs. Harry Roger on February 16. Invitations were sent to the wives of all New Mexico physicians. On February 17 the members of the Bernalillo County Auxiliary, accompanied by the national president, drove to Santa Fe for luncheon at the La Fonda Hotel. The wives of Santa Fe physicians were invited to attend the luncheon with us. Late in the afternoon we drove back to Albuquerque, in time for the president's departure in the evening.

My next report will go into further detail regarding our plans for the year.

Mrs. B. F. Roberts.

Arizona

In December the Woman's Auxiliary to the Pima County Medical Society accepted an invitation to meet in the auxiliary room of the American Legion. Following annual reports by officers and chairmen of standing committees, election of officers was held. The following new officers were elected: Mrs. Charles V. Barley, president; Mrs. J. B. Littlefield, president-elect; Mrs. Harold Kohl, first vice-president; Mrs. H. C. James, second vice-president; Mrs. Edward M. Hayden, corresponding secretary; Mrs. B. P. Storts, recording secretary; and Mrs. C. E. Bensema, Treasurer.

After the business meeting members of the Auxiliary joined members of the medical society for a Dutch lunch at which men of the society were hosts.

February 1 the Woman's Auxliary to the Yuma County Medical Society will entertain the members of the Medical Society at a dinner party. Many reservations have been made for the dinner. A business meeting of the auxiliary will be held later in the evening.

Auxiliary members over the state are looking forward to a visit from our National president, Mrs. Augustus S. Kech of Pennsylvania, who will be in Tucson February 14. Mrs. Kech will be honored with a luncheon at the Santa Rita Hotel. Many reservations are in and we hope to have many more as Mrs. Kech is a most charming person..

The State Convention will be held in Tucson April 21, 22 and 23. Headquarters will be at the Santa Rita Hotel. Plans are already underway for the convention, as we hope to have the most successful ever, so save this date.

Mrs. J. B. Littlefield.

Maricopa County

(Arizona)

The February meeting of the Maricopa Medical Auxiliary was held in the home of Mrs. Harry J. Felch. Hostesses were Mrs. Elton Charvoz, Mrs. A. A. Shelley, Mrs. Joseph Bank and Mrs. Reed Shupe.

During a short business meeting Mrs. Fred Holmes gave a very interesting report on the work of the Board of Health in Phoenix. The Auxiliary decided to sponsor a film on syphilis, entitled, "For All Our Sakes." This film will be available to all high schools and clubs in the valley who will make use of it.

The Hygeia committee reported that 51 subscriptions had been obtained for "Hygeia." There were 24 placed in schools and 27 new doctors' subscriptions.

An invitation was issued by Mrs. Charles E. Patterson, president of the State Auxiliary, to attend a state luncheon February fourteenth at the Santa Rita Hotel in Tucson, in honor of Mrs. August Kech, National Auxiliary president, of Altoona, Pennsylvania. Mrs. Kech is making a tour of the West. A great many valley members plan to attend the luncheon.

At the close of the business meeting Dr. Preston Brown gave a very interesting and educational talk on "Cancer Control."

Mrs. Thos. H. Bate, Jr.

The Annual Meeting of the New Mexico Medical Society will be held in Santa Fe, June 6-7-8, 1938.

The Annual Meeting of the Arizona State Medical Association will be held in Tucson, April 21-22-23, 1938.

Hotel Reservations for Tucson Session

The Santa Rita Hotel management will turn their hostelry over to the Association for headquarters.

SANTA RITA HOTEL. Headquarters and Meeting Place.
(All with bath)

Single Rooms .....$2.50, $3.00 ,$3.50 per diem.
Double Bed .....$3.50, $4.00, $5.00 per diem.
Twin Beds .....$4.50, $5.00, $6.00, $7.00 per diem.

Suites:

2 Room, 2 people.....$ 7.00, $ 8.00, $10.00 per diem.
3 Room, 4 People.....$10.00, $12.00, $14.00 per diem.

The suites are especially adapted for those putting on exhibits with several people participating.

PIONEER HOTEL. Three blocks distant from Headquarters.
(All single beds with bath.)

Single.....$3.00 per diem.
Double .....$5.00 per diem.

EL PRESIDIO HOTEL. Three blocks distant from Headquarters.
(Without bath but with hot and cold water and toilet.)

Single .....$2.00 per diem
Double with double beds.....$2.50 per diem
Single with bath.....$2.50 per diem
Double with bath.....$3.50 per diem
Twin beds with bath.....$4.00 per diem

Below is a listing of the hotels and accommodations. Get reservations in early through the hotel committee.

CONGRESS HOTEL. Four blocks distant from Headquarters.

Single with bath.....$2.00, $2.50, $3.00 per diem
Double Bed, 2 people....$3.00, $3.50, $4.00 per diem
Twin Beds .....$4.00, $5.00 per diem

ROSKRUGE HOTEL. Across street from Headquarters.

Single .....$1.50 $1.75 per diem
Double bed, ...$2.50 per diem
Single with shower.....$2.00 per diem
Double with shower.....$3.00 per diem
Single with bath.....$2.50 per diem
Double with bath.....$3.50 per diem

TUCSONIA HOTEL. Five blocks distant from Headquarters.

Single .....$1.50 per diem
Double .....$2.50 per diem
Single with bath.....$2.00 $2.50 per diem
Double with bath.....$3.00, $3.50 per diem

Make reservations early through

DR. J. B. LITTLEFIELD
311 Valley Bank Building
Tucson, Arizona
Chairman Hotel Arrangements Committee

BOOK NOTES

Report on Eighth International Congress of Military Medicine and Pharmacy and Meetings of the Permanent Committee, Brussels, Belgium, June 27 to July 3, 1935, by Captain William Seaman Bainbridge, M. C.-F., U. S. N. R., ret., Member of the Permanent Committee for the United States of America; United States Government Printing Office, Washington; 1937; for sale by the Superintendent of Documents, Washington, D. C.; $1.00.

In 1921 the late King of the Belgians, "Albert the Good," summoned medical officers of various nations to meet in his capitol to discuss problems of the late war and of all wars which concerned physicians. Meetings have recurred every two years. Captain Seabridge has reported the results of each conference. Thirty-six nations were represented in this, the eighth, conference by from one to ten or more delegtaes. Various subjects were discussed. Much time was given to "The Post-traumatic abdomen, "A Study of the Standardization of Methods of Analysis of Foodstuffs for Military Use", and to "Bucco-dental Service at the Front." Much useful information is found on the above-mentioned subjects and upon others especially of interest to medical officers.—*O. H. B.*

OPERATIVE GYNECOLOGY, by Harry Sturgeon Crossen, M. D., Professor Meritus of Clinical Gynecology, Washington University School of Medicine; Gynecologist to the Barnes Hospital, St. Louis Maternity Hospital and St. Luke's Hospital; Consulting Gynecologist to De Paul Hospital and to the Jewish Hospital; and Robert James Crossen, M. D., Assistant Professor of Clinical Gynecology and Obstetrics, Washington University, School of Medicine; Assistant Gynecologist and Obstetrician to the Barnes Hospital and the St. Louis Maternity Hospital; Gynecologist, St. Luke's Hospital, and to De Paul Hospital. Fifth edition; $12:50; St. Louis; The C. V. Mosby Company.

This book of 1057 pages has been so entirely revised that it makes the previous editions obsolete. Dr. Crossen in his fifth edition has incorporated all previous material used ih his former texts, and has added numerous new diagrams, and several new chapters.

In its final edition "Operative Gynecology" is a fit running mate for "Diseases of Women" by the same authors and the two books form a reliable authorative text on gynecology.

Of particular note is the discussion of diagnosis before the operative procedure, which later incorporates a definite measure for each individual condition, as well as mention of the classical operations.

The addition of a complete chapter on the gas-to-intestinal-system as related to gynecology, is particularly of interest, as it tends to emphasize the necessity of complete abdominal experience in all surgeons who invade the peritonial cavity, during their operative procedure.

The inclusion of a definite technique for radiation therapy is of interest both to the radiologist, and the gynecologist who refers this type of work, but who wishes to follow the treatment of his case intelligently.

The section on sterility is in line with the trend toward conservative operation in the pelvis, with respect to child-bearing following operation; and contains, as well as the classical procedures, several new techniques for the relief of tubal occlusion.

To summarize, "Operative Gynecology", Crossen & Crossen, is a well illustrated, complete text book, of value to the specialist, general surgeon and student, and coupled with "Diseases of Women" by the same authors, forms a complete text book of gynecology, in a logical and concise form.—*G. H. J.*

DISEASES OF THE CORONARY ARTERIES AND CARDIAC PAIN, edited by Robert L. Levy, M. D., Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University.

Associate Visiting Physician and Cardiologist, Presbyterian Hospital, New York City; Advisory Editorial Committee: Alfred E. Cohn, James B. Herrick and Carl J. Wiggers; Contributors: Claude S. Beck, Herrman L. Brumgart, Alfred E. Cohn, Louis I. Dublin, James B. Herrick, William J. Kerr, Robert L. Levy, Fred M. Smith, William C. Von Glahn, Joseph T. Wearn, James C. White, Paul D. White, Carl J. Wiggers, and Frank N. Wilson; The MacMillan Company; Nwe York; 1936; $6.50.

The fact that 445 pages are devoted to the subject by the men whose names appear on the title page is sufficient testimony to the value of the book—more than any words of the reviewer.

The preface is by Levy, the introduction by Cohn and the historical note by Herrick. The remainder of the book is divided into five parts and an index. Part one deals with the anatomy, physiology, pharmacology and pathology of the coronary vessels; part two discusses the nervous pathways and physiology of cardiac pain; part three presents the clinical features of the diseases of the coronary arteries and cardiac pain; part four has to do with medical treatment; and part five explains surgical treatment of the coronary arteries and cardiac pain. The illustrations are numerous and excellent. The bibliographies at the ends of the chapters indicate a careful search of the literature has been made and that the facts which rightfully belong in the book are in it. The index seems to be exceptionally useful.

The book recommends itself to all who make pretense of treating heart disease.—*O. H. B.*

THE SECRETARY'S HANDBOOK—A Manual of Correct English—by Sarah Augusta Taintor, Department of English, Theodore Roosevelt High School, Secretarial Correspondence, University Extension, Columbia University; and Kate M. Monro, Administrative Assistant, Haaren High School, New York City; Fifth Edition completely reset and revised; The MacMillan Company, New York; 1937.

This is a handy practical manual on capitalization, punctuation, spelling, abbreviations, grammar, bibliography, proof-reading and forms for letters, minutes, constitutions, petitions, announcements, reports, resolutions, etc. A presentation of the correct use of the English language in all sorts of formal and informal opportunities is the attempt of the authors and an excellent job they have done. The publishers' art is especially beautiful and practical. —*O. H. B.*

Physicians' Vitamin Reference Book, Presenting to the Clinician a Useful Compendium of the Latest Facts about Vitamins, by the Medical Division, Professional Service Department, E. R. Squibb and Sons; E. R. Squibb and Sons; New York; 1938.

This seems to be a compendium of useful, reliable facts on the vitamins. —*O. H. B.*

FEVER THERAPY. Abstracts and Discussions of Papers presented at the First International Conference on Fever Therapy. Edited by the American Committee, New York. Paul B. Hoeber, Inc., 483 pages. $5.00.

In March, 1937, a group of physicians actively engaged in pyretotherapy from sixteen countries met in New York as the First International Conference on Fever Therapy. This work, printed in identical English, French and German sections, consists of abstracts and discussions of some fifty-six papers presented at the meeting. They report the treatment of diseases in which fever has been found to be valueless as well as those in which it is of proven benefit.

In 1891 Wagner-Juaregg first employed fever therapy in mental disease using tuberculin. Typhoid vaccine later became the protein of choice for fever induction. But the original investigator conceived the idea that active infection was of importance and in 1917 began the treatment of paresis by infection with malaria. His report five years later of twenty-five per cent of it two hundred paretics so recovered as to be able to return to their occupations, an amazing therapeutic advance, gave fever treatment the impetus which has made it so important today. The diseases in which it has been successful has widened from the neurosyphilis to include all sorts of bacterial infectious and even certain non-infectious conditions, as peripheral vascular disease though the various manifestations of syphilis and the complications of gonorrhoea still offer the broadest field for the treatment. The methods of fever induction have been greatly extended from the use of the original foreign protein injections to the present day short wave apparatus and the Kettering hypertherm.

The first papers abstracted in this work have to do with the general physiology and pathology of induced fever, the later ones with the treatment in various diseases. Considerable specialized knowledge and experience by the operator is necessary in the choice of patients and their preparation as well in the technical side of fever treatment.

It would seem desirable if one hospital in every locality were equipped for the more advanced methods of pyretotherapy. *E. A. D.*

MANUAL OF CLINICAL AND LABORATORY TECHNIC: By Hiram B. Weiss, A. B., M. D., F. A. C. P., Associate Professor of Medicine, College of Medicine, University of Cincinnati, Cincinnati, Ohio; and Raphael Isaacs, A. M., M. D., F. A. C. P., Associate Professor of Medicine, Assistant Director of the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan, Ann Arbor, Mich.; Fifth Edition, Reset; 141 pages; Philadelphia and London; W. B. Saunders Company; 1937; Cloth, $1.50 net.

This manual is a ready reference to the details of the common laboratory tests including many new tests not yet found in the text books. It is pocket-size with 141 pages, 13 of which are devoted to an index. Physicians making the various laboratory tests, especially those not done routinely, will find this a valuable aid.

STAFF PROCEEDINGS

El Paso City-County Hospital
January 19, 1938

Dr. Russell Holt read the minutes of the December meeting and they were approved.

Dr. Holt read a letter from the Board of Managers saying that the Staff's request for a dental intern could not be acted upon at present because there was no provision in the present budget for the additional expense it would entail, but that they would keep it in mind and try to make arrangements for one at the earliest possible date.

Dr. Multhauf announced committees:

INTERN COMMITTEE:
Dr. Ralph Homan, Chairman
Dr. Robert Thompson
Dr. Robert Hardwick

OUT-PATIENT COMMITTEE:
Dr. M. P. Spearman, Chairman
Dr. Earl Rogers
Dr. Raymond Hughes

EFFICIENCY COMMITTEE:
Dr. J. Mott Rawlings, Chairman

Dr. R. L. Marrett
Dr. Wick Curtis

MOVED by Dr. Ralph Homan that Dr. Hardwick's request for transfer from Genito-urinary to General Surgical service (junior) be approved. Seconded and carried.

MOVED by Dr. Gallagher that Dr. Pangman's application for Gynecological service (junior) be approved and referred to the Board. Seconded by Dr. Ralph Homan. Carried.

Dr. Rawlings read the Efficiency Committee's report.

Dr. Ralph Homan said that at least 15 consultations had been asked for and obtained on his service alone in December, but had not been listed as no consultation sheet had been filled out. He asked that doctors called in consultation fill out the regular consultation sheet which is in every chart.

The other committees had nothing to report.

The scientific program was then carried out as follows:

Lobar Pneumonia:

Diagnosis and General Treatment—Dr. Chester Awe.

Pneumothorax—Dr. Ralph Homan.

Pneumococcic Typing and Blood Cultures—Dr. L. O. Dutton.

Discussion, questions and suggestions followed, by Drs. Spearman, Rawlings, Wiley, Wilson and Gallagher.

MOVED by Dr. Gallagher that the Board be requested to provide materials for typing pneumonia cases. Seconded and carried.

MOVED by Dr. Holt that Dr. W. E. Vandevere be nominated Chief of the Surgical Service. Seconded by Dr. Rodarte. Carried. No one else was nominated. Dr. Vandevere was elected Chief of the Surgical Service.

MOVED by Dr. Ralph Homan that Dr. John Morrison be nominated Chief of the Medical Service. Seconded and carried. No one else was nominated. Dr. Morrison was elected Chief of the Medical Service.

Meeting adjourned.

ABSTRACT OF SCIENTIFIC PROGRAM

Dr. Awe: The incidence of pneumonia remains about the same from year to year, with the exception of times when there is an epidemic, like the epidemic of influenza; but nevertheless the disease maintains third place in the mortality statistics over the country. The mortality rate in pneumonia is 25%.

Statistics from Bellevue Hospital over a period of twelve years show some 1323 cases. There were two interesting points in connection with this survey. In the first place, they had 968 of all pneumonias listed as pneumococcal infections. The second point of interest in this series was that about 28% of the cases were Type I., 12.5% Type II., and 12% Type III., leaving 47.5% in the twenty-nine groups which are commonly known as Type IV.

Several other things of interest have been noted in this series. In the first place htey found that Types I. and II. usually occur in young individuals. 45.5% of all pneumonias in this series between the ages of ten and twenty years were Type I.

Another thing noticed was that the Type I. and II. pnueumonias are practically never autogenous, i. e., they are practically always due to some outside source. In the Rockefeller Hospital they made cultures over a period of years and about 13% of the pneumonias had virulent pneumococci in the throat, so that the question of carriers in these Type I. and II. pneumonias is important.

As to the diagnosis of pneumonia; this is usually comparatively easy, because the patient has, as a rule, classic symptoms, particularly in lobar pneumonia. About the best advance that has been made in recent years in this direction was made by a group of English X-ray men who pointed out that Types I. and II. tend to develop in the hilus region. They made a study of some 187 cases a few years ago. They found that the Types III. and IV. usually start in the periphery of the lung and spread from that area. They also showed that the X-ray will show consolidation often when the clinical symptoms are very slight. This is particularly true of Types I. and II. Their series of X-rays showed that the younger people tend to clear up much more rapidly than the older individuals. Most cases clear up in from ten to eleven days, though in some older people it takes as long as fifty days before the X-rays are entirely clear.

I have had some difficulty in typing cases where they are not raising any sputum, but Cecil says you can get throat cultures and they will serve just as well as sputum. In this way you can demonstrate pneumococci very early in the disease.

From the standpoint of treatment I think the concensus now is that these patients are better treated in the hospital than in the home, for two reasons: In the first place, they can get better service and be kept quieter; and there are more facilities to work with and they can get away from the people who are constantly coming in to visit in the home. The diet is usually a liquid one, consisting chiefly of fruit juices and glucose. Some doctors add broths of different kinds, but most of them advise a simple fruit punch with glucose added. The opinion of Cecil and others who are treating lots of pneumonia is that pneumonia is usually a very short-term disease and had better be fed very lightly and carried along on just fruit juices and glucose.

From the standpoint of medication these cases are still treated symptomatically. It is pretty well established that digitalis is not effective, and in fact is harmful in some cases. It has been my practice to use it only when the pulse becomes irregular. I think caffeine sodium benzoate is generally recognized as the best stimulant in a cardiac emergency, to be given in 7½-grain doses—and in many cases half that dose is just as effective.

The usual tendency I think now is to go more and more towards the use of oxygen as the patient develops anoxemia. Two or three years ago I saw several articles saying that oxygen was actually harmful, but last year I could not find one such article, and I think it is now generally conceded that it is beneficial.

Very few cases have been noted of death of pneumonia cases from heart failure. The cause of death is usually either of two things. One is respiratory failure. You have a lung which is edematous, oftentimes water-logged, and there is a very poor exchange of carbon dioxide and oxygen. These cases need oxygen more than anything else. The other thing is vaso-motor paralysis. The patient goes along to about the fifth or sixth day of illness and the pulse becomes weak and the blood pressure drops and the heart just works against a very flabby set of blood vessels. I think in a case of this type stimulation should be resorted to. A number of men feel that adrenalin is best in a situation of this kind, in frequent small doses—2 to 5 minims given at hourly intervals. Glucose intravenously I think is very beneficial in this situation, but not in too large a dose. Several observers have pointed out the danger of giving too much glucose and saline, stating that 500 c.c., and at times even 300 c.c., will restore the pulse and blood pressure to normal.

They state that 1000 c.c. is often too much—that the saline seems to cause a generalized pulmonary edema with failure of the right heart. The other treatment which I think is becoming more and more recognized is the giving of specific serum.

This I think was a big flop until the introduction of Felton's serum. I tried the early serums and got very poor results, but this serum has given me very splendid results. The New York Board of Health is now furnishing this serum free of charge, and I understand several of the other Eastern centers are contemplating the same thing.

I think this serum treatment is a matter for education if we are going to give it in our private practice. I had one patient with pneumonia whose serum bill amounted to $75.00, and she kicked like a mule, and it was a long time before I could talk her into paying it.

There is also a very definite danger of a pneumonia patient infecting others in the home. Three times at least in the last ten years I have been called in for one case of pneumonia and ended up with two, and one time a patient coughed in my face and that night I had a chill and pneumonia followed.

Type III. pneumonias seem to respond early to Prontylin. We have had two cases treated with Prontylin in which the recovery was almost miraculous. We had one man to whom it was given on the eleventh day. At that time he was extremely toxic and jaundiced, with a high temperature, but the day after the administration of the Prontylin his temperature was normal and he was practically all right.

Dr. Ralph Homan:—Some of us have thought for a long time that heart failure was the cause of death in most cases of pneumonia. We do know, of course, that the heart will bear the brunt or absorb or come in contact with about eight times as much poison of any kind in the blood stream as any other muscle in the body, because its activity is about eight times as great as that of any other muscle. Whatever the cause of death, we know it is due to the toxin generated by the pneumococcus in the lung. While pneumothorax has a very, very small role to play, in certain cases we know we can use it to advantage.

About twelve years ago the first literature on this subject was brought out. As is usually the case with such new things, it was tried out pretty extensively and the death rate was pretty high on the operated cases, and their incidence of empyema was about 33 or 34% higher than in the cases of pneumonia which were not given pneumothorax, so that very quickly they gave it up as a bad line of treatment.

Last year when I came on the service pneumonia started early, and I decided I would try out pneumothorax on all cases where the patient was over fifty-five years old. One reason for this particular age was that I had to have some dividing line, and the older a pneumonia patient is the more apt he is to die with it. During the month of December and the early part of January we had eight cases—two women and six men—and all of them got well—whether it was due to the pneumothorax or what we do not know. This year pneumonia did not start until January, and I do not think we had more than two cases of pneumonia before that, and they were younger people and we did not want to try it. We did have one case that we tried pneumothorax on, and we got a drop in temperature all right but the patient got an empyema and a spontaneous pneumothorax later on in the disease. Breath sounds could be heard all over the lung. Why this developed I do not know, but it did.

The technique I have used in pneumonia pneumothorax is not to put a lot of pressure on the lung, because the patient is suffering to a certain extent from anoxemia anyway, but we try to put enough air in there to form a cushion so that the affected lobes will not be put to the strain that is usually put on them in pneumonia. We might put in 200 c.c. of air, and then on the second day 200 or 250. There has been an immediate drop in temperature, pulse rate and rate of respiration, showing that not enough air has been injected to cause embarrassment of respiration.

In studying the formation of antigens we know we can minimize susceptibility to pneumonia with small doses. The trouble we have in pneumonia is that we have such a large amount of toxin drawn into the system all at once that it cannot be taken care of. It takes from five to nine days for this immunity to develop.

In the mechanics of breathing we know that if we take any normal lung, deep down in the middle of the lung we get an up-and-down movement from the action of the diaphragm, and an in-and-out movement from the pressure of the ribs and accessory muscles. When we have a lobe affected and that pushing and pulling suddenly makes an effort to expand that lobe, and it forces the poison through the lymphatics and out into the system. If we put in a cushion of air, no matter how thin, the good lung absorbs the movement, allowing the affected part to remain as nearly stationary as you can get it.

As I said at first, I do not believe that there is any great call for pneumothorax in pneumonia. I have used it a little in private practice and in cases out here which I felt would not get well if we did not use it. If we use serum I don't think we will have any use for it at all.

One of the nurses here in the hospital recently started out with a typical pneumonia, with consolidation of the lower right lobe, and within a few days had become so gravely ill that we thought she would die. Dr. Awe was in and he suggested putting her on Prontylin, and we also decided to give her pneumothorax. An x-ray picture showed consolidation of nearly all of the lower lobe. The day after we saw her another picture showed a little clearing up of the consolidation, and consolidation farther up. I decided that night to give her pneumothorax, but by the next morning she was so much better that I did not give it to her. I don't know whether it was due to the Prontylin or what.

To go thoroughly into the subject of pneumothorax would take two or three hours of fast talking, and so I think I will stop now and those who wish may ask me questions and I will answer them if I can.

Dr. Dutton:—I have very little to add to this discussion. The remarks of Dr. Awe clearly indicate the value of serum therapy in pneumonia, but of course predicating that we must have typing, and this calls to mind that we do have a method of typing at the present time—the Neufeld method, which permits typing of pneumonia a few minutes after receiving a specimen; and as he pointed out, you can always get something to type, one way or another. The types that we encounter most often are Types I. and II., and V. and VII. and XIV., I believe. They constitute about 65% of the deaths due to pneumonia. Therefore, if we have serum therapy for them, Types I. and II. being proven, Types V., VII. and possibly VIII. and XIV. by serum therapy being studied carefully and giving promise, too, we have an effective means of combating at least the majority of cases of pneumonia that present themselves.

There are one or two practical points in typing. In the first place, there is about 10% error in this Neufeld technique, so that the older methods, which are more accurate but which also require a great deal more time, should also be carried out. There is another error that creeps in from a practical standpoint, and that is the occurrence of mixed types of pneumonia We should not be satisfied if we find Type I. to let it go at that, but should look also for other types in the same patient, agglutinat-

ing or doing the Neufeld reaction for them. Obviously serum therapy is not going to be effective if we use only Type I. serum and we have a mixed type.

The specific antibody which accounts for the pneumococcus in the capsule and likewise the toxin of the organism or its disease-producing quality is carried in the capsule. This capsular substance is drawn into the blood stream in large quantities in the early stages of the disease, and serum therapy to be effective must first neutralize this capsule substance; and that is the reason for the large doses of serum,—anywhere from 75,000 to 250,000 units of serum in the first twenty-four hours. It is most effective if done in the first twenty-four hours, but still has good effect after forty-eight and even seventy-two hours; and the death rate of those treated with serum after ninety-six hours is lower than that of those not treated with serum after this period.

In regard to Type III. pneumonia, as Dr. Awe mentioned, there is response to sulphanilamide, the same as streptococcous infections. The distinction between these two groups of organisms is not great. Type III. pneumococcus is possibly a midway organism between the two groups, for a long time having been thought to be streptococcus. So therein probably lies the explanation of the effect of sulphanilamide on that type.

Although this technique of typing is quite simple, it still should be done after some experience. I think we ought to have someone look them over, because I have some difficulty in learning to recognize these typings by this method in occasional cases where the organism is difficult to find. It is said that you can with assurance announce the type which you are dealing with if so much as one organism is found showing a positive reaction.

RUSSELL HOLT, M. D.,
Secretary.

PROCEEDINGS
of
THE STAFF MEETINGS OF ST. JOSEPH'S HOSPITAL

Phoenix, Arizona, January 10th, 1938.

Case I. Cerebro-spinal Meningitis, presented by Dr. Dabbs.

A child, age 3, admitted in semi-comatose condition, November 29th, 1937, with cough for 16 days, high fever, restlessness and vomiting, for the past two days. Past history of Pneumonia in the Fall of 1937. *Physical Findings*: General inspection revealed a well-developed and well-nourished three-year-old male, somewhat comatose but could be aroused. General cyanosis. Pupils dilated. Examination of lungs shows no abnormal resonance and slight bronchial roughness at each base. Heart rapid, tones distinct, rhythm irregular. Skin showed a few small petechiae on the left shoulder and over the sacrum. Skin quite cyanotic and on pressure became white, due to poor peripheral circulation. Neurological examination showed the neck stiff, Kernig and Brudzinski. Blood showed 12,400 leukocytes, 20% lymphs, 12% monos., polys. 63%, eosins. 3% and basos. 2%. Spinal fluid showed a slght increase in pressure, cloudy, cell count 19,200. Microscopic smear showed many gram negative diplococci. Diagnosis: Cerebro-spinal meningitis.

Treatment: 100,000 units of meningococcus antitoxin in 500 c.c. of normal saline plus 1 c.c. adrenalin was given intravenously over a period of three hours. The child was nauseated and vomited at times, the respiration became rapid 62 per min., pulse, too rapid to count. There were numerous rest periods in the administration but at the end of the procedure the general condition seemed much improved, the color was better and the child went to sleep. On Nov. 30th, the child was restless at times; comatose; arched spine, lying on side, knees flexed, head thrown back. Examination of the lungs showed coarse, loose squeaky rales on the left side. There was much better color to the skin. At 6:00 P. M. sulfanilamide was started. Dec. 1st, less rigidity of the neck, temperature 1 degree lower, cough. Sulfanilamide gr. X every 4 hours. Dec. 2nd, improved; cough continued but no evidence of consolidation. Dec. 4th, sulfanilamide discontinued. Dec. 5th, still slight stiffness of the neck. Hives from the antitoxin. Dec. 7th, temperature 99, sufficiently recovered to go home.

Discussion by Dr. H. Running

This case was presented as a typical example of the intravenous treatment of meningococcus meningitis. The intravenous treatment is simply employing massive doses of specific antitoxin. The rational of such treatment is that the disease is a systemic one which most often has a positive blood culture and often has petechiae to show its blood stream invasion. The role of ths spinal puncture is purely diagnostic and may often be omitted in a clear cut case with petechiae. From 80 to 150 thousand units of antitoxin are diluted to at least twice its volume with glucose or saline, 8 to 10 minims of adrenalin are added and the material injected at a slow rate intravenously. It is well to skin test, and desensitize any allergic patients. Equally large amounts may be given the next few days depending upon the response of the patient. This treatment has resulted in decreasing the death rate nearly one-half in the two Chicago contagious institutions over a two-year period. The proven value of sulfanilamide in meningococcic meningitis makes it an indispensible adjunct to the use of specific antitoxin. Remember, this is a disease which has always before carried a 45 to 80% mortality, and heroic treatment is needed.

Case II. Influenzal Meningitis, presented by Dr Sazama.

Baby, age 7 months. Birth weight 9½ pounds, spontaneous delivery at term. History of first being seen on December 20th, 1937; at this time had had a cold, running nose with cough of several days' duration which seemed to be subsiding. Didn't take formula but mother forgot to put hole in nipple. Fell from drain board of kitchen sink and landed on the back of his head, no after symptoms and not unconscious. *Physical examination*: Very large baby for 7 months, pale, puffy. Head showed the left ear drum slightly inflamed, the right O. K.; throat negative; left eyelid swollen slightly. Heart, lungs and abdomen negative. Temperature 99.8 rectal. *Treatment*: Warm irrigations to the ear. On the following day felt slightly better but later

in the day began vomiting his formula. Respirations rapid. Whining and restless. Temperature was normal. On physical examination the ear drum was dull red. Bulging fontanelle. Slight swelling over the left eye with lack of coordinated eye movements. Neck stiff. Reflexes sluggish. Kernig negative. Temperature 105; pulse 164; respirations 10. Hospitalization advised for possible pneumonia or meningitis. Laboratory tests showed the urine, albumin 2-3 pus cells 2-3 blood cells. Blood: Dec. 22nd, red blood cells 3,390,000; leuko. 6,200, lymphos. 33%; polys. 63%; and monos. 4% Dec. 28th blood showed, red blood cells 4,325,000. Spinal fluid on Dec. 21st showed cell count to be 400. Also 95% polys, and 5% lymphos. There were many gram negative motile bacilli, some gram negative diplococci. Culture showed gram negative bacilli probably B. influenza. Repeat count and fluid. Six Spinals and two cisternal punctures count ranged 150 to 4000 with a preponderance of polymorphonuclear cells.

Diagnosis: Influenzal meningitis.

Treatment & course of disease: Dec. 21st, 1937. a left myringotomy was done, culture micrococcus tetrogenous. Spinal puncture. That evening had a generalized convulsion, after which another was done and the fluid cloudy and cell count of 1400. About 50 c.c. of blood given. Dec. 22nd, following morning fontanelle less tense but neck more stiff. In P. M., spinal tap was done. One hour later generalized convulsion of 3½ hours duration. Another tap done without effect. Chloral hydrate then given. Was then started on prontosil 2 c.c. every 4 hours for 3 to 4 doses. Dec. 23rd, seemed much improved all day. Took formula slightly better. Neck still modorately stiff. Fontanelle softer. Temperature 102.4. Transfusion of 50 c.c. Dec. 24th, restless all night. Fontanelle tight, temperature 104.4. Spinal puncture done, spinal fluid pressure increased, cell count 470. Dec. 25th, no change until in the evening, when another convulsion. Temperature continuous 104. Spinal tap 950 cell count. Dec. 26th, general condition worse, pulse 144, temperature continuous 104.4, respiration 62. Transfusion of 50 c.c. blood. Cranial sutures are separated. Refused food and tends to choke when water is given. Dec. 28th, little change from yesterday, fontanelle very tense, cisternal puncture done. 30 c.c. fluid withdrawn. Sutures came together and fontanelle retracted. Cell count 150. Dec. 29th—Looks very bad generally, cries considerable. Pupils dilated. Left leg and arm are spastic. Babinski very marked. Cranial sutures again separated. Another cisternal puncture done. Cell count 1800. At 6:00 P. M. temperature was 105.6, respirations 65. Suspected pneumonia. At 10:00 P. M. baby cyanotic, Cheyne Stokes respiration, about 100 per min. Dec. 30th,—baby more cyanotic, temperature 107, vomiting, pupils irregular, no definite rales in chest. Baby died at 4:40 P. M. Necropsy done with following findings: 1. Fibrinous meningitis; 2. Internal hydrocephalous; 3. Pineal hypertrophy; 4. Pituitary hypoplasia; 5. Thymus hypoplasia; 6. Hypostatic congestion of lungs; 7. Passive congestion of liver, spleen and kidneys.

(Rather long but very worthwhile discussions of the subject of influenzal meningitis were given by Dr. Kent Thayer and Dr. H. P. Mills, only brief summaries of these are given here.)

Dr. Kent Thayer:

Our conclusions from the reports we have studied are: 1. Influenza bacillus meningitus is essentially a disease of young children. The mortality rate is highest under 2 years of age, but is probably around 95% in all. 2. The treatment is very ineffective, and probably the most effective treatment is lumbar puncture, although serum may be of some value.

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PROCEEDINGS (Continued)

Dr. H. P. Mills:

Bacillus influenza or hemophilius influenza as well as a filterable virus have been advanced as the cause of influenza and considerable study along these lines has been done. For detailed information refer to a recent publication by Swope, in "Annals of Internal Medicine" on "Recent Knowledge Concerning Influenza."

PNEUMONIA IN THE HOSPITAL FOR DECEMBER, by Dr. Fred G. Holmes.

Discussion of the various types of pneumococci with the use of specific serum, especially in types I and II, and establishment of routine and suggested procedures for the treatment of pneumonia cases in the Hospital, as published in the PROCEEDINGS.

Dr. Holmes pointed out that types I and II pneumococci are seldom found in normal throats, hence having either of these two types in the sputum in a patient with a high fever is quite indicative of pneumonia, while finding higher types in the sputum might be merely incidental to some other disease, since they are frequently found in normal throats.

The reduction in cost of Laboratory work including blood counts, urines, sputum typing, x-ray and blood culture, was announced and the cost of serum in suitable cases was compared to the prolonged illness, hospitalization and chances for complications in non-serum treated patients. The use of continuous oxygen in cyanosis; the questionable benefit of diathermy; and the importance of *not* removing *clear* fluid from the pleural space (probably tuberculosis), were brought out.

In December there were 22 charts with a diagnosis of pneumonia; 12 lobar and 10 atypical or bronchopneumonia. Of this number only 5 were typed. Only 2 cases were given serum and this in insufficient dosage. There were 4 pneumonia deaths, or 18% mortality.

1938 Society Meetings

Arizona State Medical Association

Santa Rita Hotel

Tucson; April 21-22-23

New Mexico Medical Society

Santa Fe; June 6-7-8

Make your plans now to attend your own state meetings!

The Mouth Gag

Things pertinent and impertinent

By

HARLEY YANDELL, M. D.

Guess you boys have all been working pretty hard this past winter. Spring is here again, and no doubt some of you are getting sorter groggy and a little "groovy" and, well, just bordering on a bit of natural indifference.

Did you see the new Southwestern "Medicine" Journal? They forgot and went and left the yellow cover off. . . So, there was cactus plants, contents and Warner's laboratory exposed on the front page. . . And wasn't that a cute girl's picture with all them cigarettes, on the back. . . I showed it to a preacher. . . He "shamed" me. . . He said it was a "travesty" on sacred justice." . . Well, they don't exactly "practice what they preach" too, neither. . "So there." Do they?

One of our anesthetists was seen holding his patient's britches, with his finger pointed toward the pocket book, at the bedside waiting for 'im to wake up. . . "Better late than never" is what he says. He's a good gas giver, too.

Dr. E. C. Bakes said he did a submucous once in twenty minutes. . . His patient fainted and Eddie just kept right on, and when the patient was through fainting, Eddie was ready for his money. . . He never said whether he got to count the dinero or not.

There are folks here in Phoenix who think I am honest (that's got me), and every once in a while, they'll ask me about certain "snoot" fellers and others, as to whether I consider them honest and "conscientious", etc. Well, a few days ago one of Dr. Henry Franklin's patients came to me and said, "Doctor, if you were going to have to have a cataract operation performed on you, would you risk Dr. Franklin to do it?" (you see I do 'em, too, of course not as *good* as Henry does 'em.) I said, "Whatever that boy" (I really said "boy") says he can do, why he can do it, and there ain't no *maybe* about it. I said, "That doctor sticks to his eye just like a foreign body sticks to the cornea, and if he operates on you, he ain't "practicing on you." The patient said, "That was what I thought, but I knew you would tell me the truth." He paid me $3.00, why not?

I'm a tellin' you right now, never take a patient to the hospital unless you are good at writing. You've actually got to plunge into journalism or get awfully criticised. The thing to do, if you DO happen to have a patient in the hospital, is to WRITE something on that record, and be sure and make it look purty, too. No, don't "pad" it. Look up a bunch of big names and write 'em down so nobody can know what you mean. Here's what to do, write sorter like Victor Randolph writes. There ain't been nobody yet who can read that boy's fist, but he's always in the "good records." (He ain't so bad to pattern after, anyway.) Now, if you want your patient to go to the bath room, be sure and leave written orders—it's got to be in script—there'll be consternation if you don't. The TYPE of toilet paper, I understand, may be left out. You've got to know your GARDEN, too, whether your patient is to have a bunch of carrots, or stick to spinach, prime rib, roast beef or some vitamins in clear capsules that you can see through. The thing to do is to WRITE. . . ERGO, watch your rhetoric. Let the Interns watch your patient.

They say that Billie Sweek says he didn't mean to call a surgeon who bathes in mercurochrome and shoots prontosil a peckerwood. . . He meant *woodpecker*. . . And they say he said he's sorry that he lowered the American chipmunk like he did when he compared the cute little thing sitting on its fat little bottom gnawing a nut, to a surgeon who has nothing but *skill* in his *fingers*.

(Continued on page 116)

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The Mouth Gag—Continued

Well, a lot of us are gettin' pretty good at checkers. . . Our climate ain't right for doctors.

Reckon a goodly sized bunch of you have been selected as "Who's Who among Physicians and Surgeons". . . Yeah, they picked on me, but I'm going to write and tell the boys over there in New York, that I ain't fit for that. . . I believe that "What's What" would be better. . . My craw don't feel just right when somebody asks me to pay 'em so they can make a WHO out of me. . . Maybe this is sorter bordering on whooey. . . Think I'll withdraw in favor of Brother Brinkley.

Guess you all read "Ten Doctors, Nine Wrong Diagnoses" in Liberty January 22nd, page 7? Well, after I read it I just sat and looked at Bernarr MacFadden's mug a little while and got nauseated, and then I puked when I read what he had to say agin' Mr. Ickes, who believes, it seems like, in Medical Fascism. . . Ain't everything gettin' strange?

I can't help but feel sorry for one of our general doctors. . . Now that boy is plum smart, and everybody knows it, except him. . . He reads so much scientific medicine, that, well, an ordinary hospital ward won't hold the literature that he reads. . . Well, not long ago he was called to see a 7-year-old boy who was unconscious and had a temperature of 105. . . Now here's the way it was. . . He just knew so many things that *might* be wrong with the little fellow, that he scared the mama and papa so much that they called in another doctor, who wasn't so smart I reckon, and he got there before the book doctor left. Well, they went over all of the *might be things* and then this doctor who "practices" right here on earth, commenced pullin' off his coat and said to the doctor who "practices" in the stratosphere, that "the boy might be full of feces, too". . . And sure enough he was. A nice little soft rubber tube and some warm soapy water used on the little fellow while he was in the bath tub, did the work and he went back to school. . . . Well, for a feller to know everything and be a failure at the bedside, just don't make sense. . . But that's the way it goes.

The stewed juice of little dried balls of hay and straw, after having passed through any ruminant animal of the genus Ovis, is still being drunk in Arkansas to "make the measles come out." This same treatment was used in Southern Illinois 40 years ago for the same purpose. I had a cupful. The measles came out. Why not?

The Annual Meeting of the Arizona State Medical Association will be held in Tucson, April 21-22-23, 1938.